Research for Curriculum Improvement

1957 Yearbook

Association for Supervision and Curriculum Development
A department of the National Education Association
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Association for Supervision and Curriculum Development

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From the Association

THIS YEARBOOK appears at a very opportune time. Both laymen and educators are engaged in a searching analysis of the role of education in American life. They sense, now as never before, that the future of America depends to a marked degree on the quality of its educational programs. Furthermore, thoughtful educators agree that the really fundamental improvements in education take place when teachers are at work on the actual problems which concern them, for curriculum improvements come about from meeting the needs in the classroom and are not automatic. To solve these problems effectively, knowledge of how children develop and learn must be applied. There must be a sensitivity to the demands of living which pupils are now facing and will face in the future. Values that are deemed important must be recognized.

This 1957 Yearbook of the Association for Supervision and Curriculum Development will prove to be extremely useful to teachers and other curriculum workers in bringing about instructional improvement. Arthur W. Foshay, chairman, and James A. Hall, co-chairman, state in the introduction that this book is designed to help educators who are conducting research at the point of action. The research process itself is described in helpful detail. How to make use of existing research is discussed, and research methods based on careful inquiry are proposed to meet the needs of those actually engaged in improving the programs of schools throughout our country.

The association deeply appreciates the work of each of the members of the 1957 Yearbook Committee and of the contributors in producing such an excellent analysis of cooperative curriculum research.

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Introduction

THE PRODUCTION of a yearbook on curriculum research by the Association for Supervision and Curriculum Development, NEA, represents a kind of culmination. Research *about* the curriculum, as is pointed out in Chapter Two, has been vigorously pursued in the United States for more than 50 years. The introduction of research directly into the process of curriculum improvement, however, has a much briefer history.

Those who founded the present Association for Supervision and Curriculum Development early in World War II represented, both in their professional biographies and in the point of view they brought to the new association, a way of thinking that implied a place for research in the curriculum-improvement process. But they came out of a period (the 'thirties) when the form such research should take had been thrown into question. There was the massive, piecemeal research on the school subjects, which had only recently been brought together in the various psychologies of the school subjects. There were the large projects: The Eight-Year Study, just completed; the Sloan Foundation Studies; and the like. And somewhere in the midst of all this there was the curriculum worker, not really involved in either kind of research, except as putative consumer of it.

The most consistently expressed value of the association has been that of action and practicality. When applied to curriculum development, this has led the membership to agree heartily with one of their number who once wrote (desperately?) of "changing the curriculum by changing it." The membership of this association consists mainly of those directly responsible to school boards and local communities for the quality of the instruction offered where they are. Therefore, they have been consistently most interested in the discovery of new practices that are promising, and they are endlessly curious about ideas that offer hope for improvement.

Early in its history, the association formed a Commission on Research, which has given expression to the need of the membership for an approach to curriculum improvement that would place research techniques and rationales in a setting likely to result in actual cur-

riculum improvement. The commission and the membership were not particularly interested in developing a new kind of research. Their interest was simply in meeting the needs of the field of operation in education as they saw these needs. However, in the course of the various projects undertaken, a fresh approach to curriculum improvement has appeared: what has come to be called cooperative curriculum research. This approach, once it was made, showed itself to have great promise and a broad appeal. It demanded explanation and illustration.

It is out of this background that the present yearbook was planned. The Yearbook Committee first met at the annual conference of the association in Chicago, in 1955. A plan for the yearbook was developed at that time, and most of the chapters were written during the next 12 months. The committee met again at the annual conference in New York, in 1956, and the yearbook was completed during the summer of that year.

The committee members have made an effort to offer such wisdom as has so far accumulated in the short history of cooperative curriculum research. They did not set out, however, primarily to develop a yearbook on this topic. They intended, instead, to deal with the concerns underlying it: How can we make use of existing research? How can we base proposed curriculum improvement on careful inquiry? How can we devise methods of research that fit the needs in the field? How can we conduct research at the point of action? To deal with these and similar questions, a framework for the yearbook was developed that is germane to the particular problems of curriculum improvement through research. These problems are represented by the four sections into which the book is divided.

Section 1 offers a theoretical and historical setting for curriculum research. Chapter Two offers a long-needed documented history of curriculum research.

Section 2 deals with the research process. We asked Taba, Robinson, Herrick and Harris, and Bebell to deal with the process according to the phases through which any research project passes: problem identification; the achievement of a working focus (the making of working hypotheses, if you will); the selection and treatment of data; getting meaning from the data. These authors were confronted with a difficult task. It was apparent to each of them that it was not possible to treat the "steps" of research out of relationship to each other. The successful carrying out of each phase is a research project in itself. Therefore, each author has found it necessary to state a framework of curriculum research into which he can put his chapter. The effect of this, as one of the authors pointed out in a letter, is that "each chapter explodes

from its own center, like a rocket." Putting it differently, the reader should recognize that each of these chapters deals with the research process as a whole, with an emphasis on one phase of the process. Each chapter, therefore, may be considered as a statement with its own integrity, and should be read as such.

Section 3 deals with the persons who conduct research. Those who have attempted curriculum research in the school setting are forced to recognize the necessity that good human relations be fostered and maintained. For a school person to conduct research on his own work, he must be secure in the knowledge that improvement in his work is possible. Research on his own work may seem to imply that something is wrong with the way he is working now. To make this implication public through conducting cooperative research on it, under some circumstances, is to place the researcher in an impossible position with his fellows. Therefore, we have provided in the chapter by Miles a discussion of the problems in this field. Mooney's chapter is based on another concern, one often overlooked. To produce research, one must first accept oneself as a researcher. One must accept the idea that it is not only inevitable but also desirable that the researcher's perceptions and value-system enter into his work. Mooney implies a basically new approach to the question of the objectivity of research and of the researcher.

Section 4 deals with three aspects of the setting for cooperative curriculum research. Frazier discusses the organization and management of the research process in the school setting. Doll deals with a number of blocks to inquiry that sometimes appear in the school setting. Hall, in a statement that is new to the literature of research, deals with some ethical problems that arise when one attempts research on the learning of students.

We have included two appendixes. The first of these, an annotated bibliography on curriculum research, is written as if it were a chapter in the yearbook itself, and is based on the assumption that many readers will wish to be guided into the literature. Examples of excellent curriculum research of several types are included, together with references and materials dealing with various research techniques. Appendix B, a report on the first Cooperative Curriculum Research Institute, is included for two reasons. First, this institute, jointly sponsored by the Association for Supervision and Curriculum Development and three other educational organizations, is a recent example of an impressive series of projects undertaken by the Research Commission of the association. As such it will be of interest to members of the association

and others who may wish to undertake such training institutes.[1] Second, the Yearbook Committee thought that the evaluative devices used in reporting this institute would be of use to those who wish to conduct evaluations of in-service programs, both of the institute and workshop type.

Here, then, is the yearbook. It is intended to be useful to those who are conducting curriculum research or intend to. The people who wrote it took one another as their audience, agreeing that if it were not interesting to them it would not be interesting to others.

A number of members of the association contributed time and advice to the yearbook, both as readers of the various chapters and as consultants to the committee. We wish here to acknowledge the indebtedness of the committee to Chester Babcock, Robert S. Fleming, William M. Alexander, Stephen M. Corey, G. Robert Koopman, H. H. Giles, David H. Russell, Veronica E. Casey, Charles L. Boye, Madeline Roberts, and Max R. Goodson, all of whom read manuscripts of the chapters as they were developed, and made detailed and helpful suggestions to the authors.

ARTHUR W. FOSHAY, *Chairman*
JAMES A. HALL, *Co-Chairman*
Committee for the 1957 Yearbook

[1] A second Cooperative Curriculum Research Institute was conducted at Père Marquette State Park, near Grafton, Illinois, in May 1956. This, too, was sponsored by the Association for Supervision and Curriculum Development, NEA.

Section 1

Research in Curriculum Improvement

THE TWO CHAPTERS in this section deal with the broad background, in principle and in history, against which curriculum research must be placed. Chapter One represents an effort by the chairman and co-chairman of the yearbook to state the main considerations that must be dealt with by curriculum researchers. These same considerations are taken up by the various authors of the chapters that follow. Chapter Two sketches the history of curriculum research, beginning approximately with the turn of the century.

If the present is considered as the meeting-point of past and future, then this section suggests the nature of the past and the future, and the subsequent chapters deal with the present. These two chapters may be thought of as introducing the balance of the yearbook.

Chapter One

Research
In Curriculum Improvement

ARTHUR W. FOSHAY

JAMES A. HALL

CURRICULUM INNOVATIONS down through the ages have come chiefly in response to theological and political demands, only occasionally as the result of systematic inquiry. However, during the past 50 years or so, attempts at basing proposed curriculum improvements on evidence have been gaining in frequency. Now most such proposals make some claim to being based on "the facts." It may seem unnecessary to discuss the place of research in curriculum improvement, but there is an old issue in this field that has gone unresolved. The issue is this: Is it or is it not true that research on teaching and learning forces into useless disintegration something which must be viewed as a whole? This is the prior question that gets in the way both of the doing and the accepting of curriculum research. The purpose of this chapter is to consider this issue in broad terms, in order to support the assertion that the issue need not exist and that curriculum research of a unified kind is ultimately possible, provided the nature of the curriculum research situation is properly taken into account.

Those of us who attempt to conduct research on the curriculum constantly face critics who imply that no such research is really possible. These critics make two main arguments against curriculum research. First, they argue that teaching is an art and that the kind of analysis made by researchers destroys the art in the act of examining it. The educational researcher, they assert, seems everlastingly to be preoccupied with the details of the surface of things, whereas excellence in

teaching is not to be found there, but in the wholeness of the act, including all that is known and unknown about the people involved.[1]

Second, critics of curriculum research argue that the classroom[2] is an enormously complicated social situation and that it is impossible to generalize about the curriculum because any apparent learning is influenced by a great many factors unknown to (and some unknowable by) the researcher.

These two arguments are essentially the same argument stated two ways. What is implied by both is that the phenomena of teaching and learning defy analysis. One might ask, what is the alternative? Since all thinking involves some kind of analysis, is one to stop thinking about teaching and learning? Such critics have a ready answer: since the usual methods of research are inappropriate, turn from them to exhortation of the teacher. Inspire him. Tell him that basically the students emulate him—that this is what teaching really amounts to. Tell him that to improve his teaching, he, in turn, should emulate great teachers; that greatness in teaching is primarily a matter of greatness of spirit; and that it is greatness of spirit which really communicates to students. This, in effect, is the lesson suggested by Gilbert Highet.[3]

Perhaps the best way to come to grips with this argument is to acknowledge at once that teaching is an art, and that a teacher is an artist. One may, however, proceed to consider how the practice of this art may be improved—unless one really believes that artists cannot learn about their art. It is our contention—and, indeed, the *raison d'être* of the present yearbook—that the art of teaching can be improved through the application of the methods of inquiry. Not only can it be improved in this way; it has been improved in this way. Our hope for meeting the massive crisis in the public schools relies on our ability to conduct more and more significant inquiry in this field. To subject the problems of teaching and learning to systematic inquiry is to continue the age-old quest of thoughtful men, seeking to put as much of

[1] See Clark E. Moustakas, "True Experience and the Self," *The Self; Explorations in Personal Growth*, Clark E. Moustakas, editor, New York: Harper and Brothers, 1956, for a current example of this position. Consider the implications for research of statements like these (p. 11-12): "The self is not definable in words. Any verbal analysis tends to categorize or segment the self into communicable aspects or parts. The self can only be experienced. . . . When the focus is placed on words of the self rather than on the self itself, the unique perception of the individual person as expressed in the totality of his behavior is not really understood."

[2] We shall use "classroom" here to refer to any school situation where learning is guided by a teacher.

[3] Gilbert Highet. *The Art of Teaching*. New York: Alfred A. Knopf, Inc., 1954. 259 p.

life as possible under rational control. To do this is not to deny that teaching is in the main an art.

Ultimately, there can be no dispute between researcher and artist in education. Their aims are identical, and (as is implied repeatedly in this yearbook) they are not even different persons. The research approach to the improvement of the curriculum has its place at those points where the teacher-artist tries to behave with self-discipline, to exercise deliberate control over what he does, in order to place some rational control over what he evokes in others. The art of teaching becomes identical with the science of education when a teacher attempts to predict the impact of his behavior on learners, and to test the accuracy of his prediction.

We do not mean to imply, however, that all thoughtful action is research. To do so would be to blunt the term beyond usefulness. It is one thing to launch a stream of action and "see what happens"; it is quite another to predict that a certain kind of thing will happen if a certain action is undertaken, then to see whether what is predicted actually occurs. It is one thing to be sensitive in a general way to the needs and potentialities of learners, and another to be systematic about specific aspects of their needs and potentialities. This latter form of behavior has the great advantage of putting one's mind in focus. And the interesting thing about a mind in focus is that it is aware of more events than one that is only generally sensitive. Acting within an intellectual framework, or focus, one has somewhere to "put" what occurs, so that less is lost to one's awareness. In this sense, systematic thinking helps the artist to hold on to his insights.

Let us now consider where the teacher-artist does his work. The classroom is, indeed, a complex human situation. Each learner, and the teacher, is a complicated human being. The many students in a classroom act not only as individuals, but (taken together) as a social system.[4] The school is a part of many other systems: the political subdivision, the broad community of educational institutions, and so on. The school itself is a system, of which the classroom system is a part.

Within the classroom, many forces are at work. Some of these are unknown to those who are affected by them; some are unknowable. One such force has been called the "invisible committee" behind each

[4] See Talcott Parsons, *The Social System*, Glencoe, Illinois: The Free Press, 1951. Parsons' tight conceptual scheme is difficult to summarize, but it does serve to suggest that the interlocked social forces, individual perceptions, and the like that are in a classroom may be treated as a whole. Essentially, the "system" is studied by studying the relations between the various "units" that make up the web. See p. 3-4 for his first attempt to make this clear.

individual—a reference group to which he feels himself accountable. Both teacher and student are more or less aware of another force, the pedagogical tradition that dictates what subject matter shall be attended to, and even how it shall be studied. Thus, we tend to place more overt, official value in school on verbal learning than on social or moral learning, not because we are convinced of its greater value, but because according to tradition the school exists primarily to produce verbal learning. The culture as we perceive it acts as yet another force—the "societal needs" which control in some measure what shall be taught. The students act in conformity with a peer culture, also in conformity with the culture the school represents as an institution, and in conformity with the professional culture the teacher seems to them to imply. For each student, there is a private constellation of motives and goal-perceptions, which becomes less subject to manipulation by the teacher as the student grows older.

One effect of the fact that independent human beings are the objects of classroom experimentation is that these "objects," being people, respond to the experimentation itself as well as the content of the experiment. Children and teachers often become loyal to the experiment, and want to "make it work," thus influencing their own motivation in a special way. The expectations of the people involved in curriculum experiments are inevitably a part of the data to be evaluated—or the experimenter pays the penalty in spurious findings. As the present writers point out elsewhere, "Experimentation is a function of the situation in which it takes place. The beliefs and perceptions of those in the situation determine the hypotheses formulated, the tests made, and the [applications] developed." [5]

How, then, is such complexity to be taken into account? There are several ways. Technically, one takes the complexity into account when one employs data-gathering devices that are intended to handle many factors simultaneously. The number of such devices has been increasing during recent years.[6] It helps considerably for the researcher simply to avoid assuming that he is dealing with the entire complex, so that he will have a decent humility when he states his conclusions and interpretations.

A much more far-reaching solution of the problem of the complexity of the classroom, as well as the problem of getting research results into action (which will not be discussed further here) has become available recently: make the classroom teacher a principal investigator. How

[5] A. Wellesley Foshay and James A. Hall. "Experimentation Moves Into the Classroom." *Teachers College Record* 51: 353-59; March 1950.

[6] Chapter Five deals at some length with this and related matters.

simple this solution is, yet how effective! The teacher knows (or can know) the subtleties of a particular classroom as no one else can. The teacher is in an unequalled position to subject proposed improvements to realistic tests. The teacher knows better than anyone else what needs improving at the point of operation. The teacher is the best judge of the sufficiency of experimental findings. And—most important—the teacher is the one person in a position to put findings to use. If we want really to change the curriculum for the better, it is necessary that the researcher be in the classroom, where the change must ultimately be brought about. The movement to involve teachers as cooperating researchers, which has been given such impetus by the Association for Supervision and Curriculum Development, brings the researcher to the classroom, where he should have been all the time.

When teachers view themselves as experimenters, and their work as experimental, their basic relationship with other researchers in education is altered. Instead of being mere consumers of others' findings, they become informed critics and co-producers. They can make much use of existing research, primarily as a source of ideas about what should be attended to in class, but also as a source of methods of gathering evidence.[7]

We have discussed the complexity of the classroom as a research situation, and have acknowledged the necessity for curriculum research to be located in it. We have suggested that the teacher become central to the research process. Let us now consider in broad outline the content of curriculum research.

The basic phenomenon in the classroom is a pattern of interactions, and the unit for research in the curriculum is the pattern. Teachers deal with events in process, in pattern, not with one event at a time. To describe the pattern, the events that make it up must be described, but their relationships to one another must be the main focus. No study of teaching and learning that leaves such relationships unexamined can have much meaning. Thus, the quality of Johnny's completion of his arithmetic assignment is more likely to be a function of the setting (as Johnny saw it) in which the assignment was given than a function of the immediate directions given Johnny by his teacher. The setting as

[7] See B. R. Buckingham, *Research for Teachers*, New York: Silver Burdett, 1926, for an early attempt to deal with this series of problems and ideas. Buckingham, writing in the midst of the certainties of the scientific movement in education, did not see the teacher as a central person in curriculum experimentation in the sense discussed here, but he sensed the problem. Consider the following (p. 369): "As long as learning experiments are handled by psychologists alone we shall make slow progress so far as education is concerned. . . . We have a lot of piecework but no quantity production. The only persons who can supply the need in this respect are the teachers."

Johnny saw it was a pattern of events against which he put the homework assignment.

The curriculum research that has greatest value is that which makes such patterns clear. Such research evaluates the relationship of pattern to goal through the examination of the impact of the pattern on the learner's perception of himself *as* a learner of whatever it is he is studying. A substantial amount of curriculum research over the years—including some that is recent—has overlooked this basic study scheme. During the "scientific movement," a great deal of research was concerned with the logic of the subject without sufficient regard to the integrity of learners as individuals. In more recent years, partly in reaction to the over-exclusive emphasis on subject matter in the research of the 'twenties, some of us have become preoccupied with the nature of the child as a learner, recognizing (as of course we must) that an appropriate understanding of children is essential to effective teaching. But the two are integrated if we will study the pattern of interaction in which they are caught up.

One effect of the switch from subject to child has been to leave many of us bewildered at our own ignorance. To know a little about a subject is to recognize the gap between one's knowledge of it and the scholar's far greater knowledge. To know a little about the growth and development of children is to recognize how little one really knows about any one child. We are constantly made aware by such studies of the partial nature of research findings.

Curriculum research must be understood to yield only partial, tentative findings. To say this is not in any way to minimize the importance or effectiveness of curriculum research. It is rather to apply to this field an assumption that is fundamental to any scientific thinking. All research yields partial, tentative findings. But the need to recognize this in curriculum research is urgent, since the teacher works in a tradition that seems to imply that he should deal only with certainties. Moreover, he is called upon to explain what he does to a public which does not understand the tentative nature of research findings. And he is expected to be definite (even definitive) about what he offers and the way he offers it. Add to this the need all teachers share, to have confidence in the methods they employ and the content they offer. Conducting research requires a "tolerance of ambiguity" that is in some sense incompatible with the teaching situation.

If the teacher-researcher can accept the partial answers that research yields, one large class of the problems mentioned earlier is taken into account: the problem of the unknown variables operating in the classroom, and the gap between the teacher's and the scholar's knowledge

of the subject matter. The elementary school teacher is neither economist, literary scholar, mathematician, geographer, nor sociologist. But all of these disciplines contribute to the subject matter of the school curriculum. The teacher, in his more depressed moments, may feel himself to be working with shadowy entities—little-known students, little-known subject matter, even a little-known self.

In the face of all this ambiguity, the curriculum researcher must settle for what he *can* know. He must deal with the phenomena he can recognize as present, knowing that as he comes to a deeper understanding of these, he will become aware of others that can be studied. The alternative is to immobilize one's mind. This happens all too often, when thoughtful educators reject the analysis of a problem for research purposes because the whole of the problem is not being studied. As I. A. Richards says, speaking of writers: "What he uses has a nucleus, namely what he explicitly mentions. Round this is a sphere of relatively stable factors, those things which all, on reflection, would agree to be implied, to be necessarily co-operative with what he has actually mentioned. Round these, less and less dependable and stable, are sphere after sphere of more and more doubtful factors which spread out, if we carry our speculative description far enough, to include the whole past experience of the reader. If, and insofar as, communication occurs, vast ranges of these free or unimplied factors must still be somehow ordered so as to secure some correspondence between those active in the reader and in the writer. They are so ordered, if at all, by what Coleridge called 'the all in each of all men,' the common principles of human life and the routine of normal experience. It seems a shadowy thing on which to depend unless we recognize that it is rooted in our biological continuity one with another." [8]

We may substitute "teacher" for "writer," "learner" for "reader," and "learning" for "communication" in Richards' statement. If we do, then the solution he implies to the problem of conducting meaningful curriculum research is that we should be concerned with what is most fundamental to the learner's interpretation of experience—the "all in each of all" of us. The "biological continuity" of man includes a universality of need and of ways of meeting need. A study of how to teach, so that the learner learns what is intended, cannot overlook this universe of meaning.

This can be done, and our research remain less than global and still worth while, if we define our curriculum studies as being concerned

[8] I. A. Richards. *Interpretation in Teaching*. New York: Harcourt, Brace and Co., Inc., 1938. p. 66-67.

with a single pattern of interaction at a time, examined in depth. Herein lies the hope that we can achieve in curriculum research a synthesis of learner, subject matter, teacher and total environment. The great, sweeping generalizations about the curriculum, which have yet to be formulated, are to be found deep in the relationship among these factors. When these generalizations are stated, they will describe the way people modify basic interaction patterns to meet specific learning situations. The mode of the research to be used in this quest is not properly described either as "action research" (concerned mainly with school practices), or "fundamental research" (concerned mainly with theory building). The approaches and rationales we associate with these terms—and they are meaningful and necessary now—will be relevant also to this even more universal research, but they will be seen within a larger synthesis.

In the meantime, we can well be content with the knowledge that the answers we find are partial, because we can sense the whole in which they fit. We can afford optimism about curriculum research, provided we continue our present attempts to involve all the relevant people in it and to recognize that what we now struggle with is essentially a single problem, dealing with the nature of man as learner.

Chapter Two

Curriculum Research In Historical Perspective

MARGARET G. McKIM

CURRICULUM IMPROVEMENT comes through answering questions in three fundamental areas. First, what does the nature of our society imply for the development of its future citizens? Second, what should be the role of the school in this development? Third, what does our knowledge of the nature of the learner and of the learning process indicate for the most effective performance of this role? The first two areas involve values. However, studies over the past 50 years indicate that research has a part to play in deriving as well as in validating these values. While much is still to be discovered regarding the nature of the learner and the learning process, it is perhaps not unrealistic to hope that research eventually will provide most of the answers to crucial questions in this field. There are gains, also, in research concerned with the nature of society. Investigating through research the implications of these findings for school practice represents another major problem area, very complex and in many ways the most challenging for research workers today.

This chapter summarizes the trends in research in curriculum improvement over the past 50 years, advances generalizations regarding present status, and suggests implications for the use of research in curriculum improvement.

What Has Been the History?

If the curriculum is defined in terms of the experiences of the learner under the guidance of the school, a history of the role of research in curriculum improvement since the turn of the century has to encompass much of the scientific movement in education.

The number of studies appearing since 1900 is overwhelming. In attempting to bring some order out of this profusion the writer has relied heavily on summaries made by others. The *Encyclopedia of Educational Research*, the issues of the *Review of Educational Research*, and the various yearbooks of national societies were among the most helpful resources. Trends, as seen by the writers of articles in these publications, appraisals of existing research, and suggestions for needed research proved particularly valuable.[1]

Several problems arose in the writing of this survey. First, the number of areas involved raised questions of organization. This section is not a capsule history of each area. Rather, it is an attempt to note trends that seem to be of greatest significance to the curriculum worker. Second, while it was possible to note changes in emphasis, clear-cut chronological divisions were not easily identified. The summary that follows is roughly chronological, but antecedents to each new emphasis can be found, and new emphases once established usually continue to be influential. Third, it proved impossible to disentangle the contributions of research and of theory. While an attempt is made to keep the focus of this section upon research, other developments are mentioned if they help in telling the story. Finally, the problem of documentation proved to be major. Least likely to be helpful seemed to be an attempt to turn this section into a condensed review of educational research. The studies cited tend to be the familiar ones most likely to illustrate the point under discussion. Readers who are interested in more detail are referred to the reviews mentioned earlier.

The First Quarter-Century—Concern with Objectivity and Social Utility

If one publication were selected to mark the close of the early history of the scientific movement in curriculum improvement, it might well be the Twenty-Sixth Yearbook of the National Society

[1] The reader will find a detailed and carefully documented survey of educational trends over the past 50 years and of background developments in psychology and philosophy in Walter S. Monroe, *Teaching-Learning Theory and Teacher Education, 1890-1950*, Urbana: University of Illinois Press, 1952, p. 1-180.

An extensive account of the history of the elementary school is to be found in Harold G. Shane, editor, *The American Elementary School*, Thirteenth Yearbook of the John Dewey Society, New York: Harper and Brothers, 1953, 434 p.

The history of the evolution of the secondary school is described in detail in J. Paul Leonard, *Developing the Secondary School Curriculum*, Revised edition, New York: Rinehart and Company, 1953, p. 1-187.

for the Study of Education.[2] This was the first yearbook of the society to be written specifically on the curriculum. The two terms most frequently used to characterize this early period are *objectivity* and *social utility*. This was the time of activity analyses, of error studies and word counts, and of standardized tests.

Early developments in educational psychology. In the early 1900's educational psychology was established as a science in its own right. Under the leadership of Dewey, Angell and others the focus turned from introspection as a basic research technique to the objective study of man as an active organism.

By 1914 Thorndike had published the third of his volumes on educational psychology.[3] Additional impetus toward objectivity in psychological research came through the work of John B. Watson and other behaviorists. This period also saw the early investigations of transfer of learning by James and the somewhat later studies by Thorndike, Woodward, Judd and others who challenged the mental discipline concept and raised questions regarding what learnings are actually of most worth.

In the early 1900's child development also was established as a separate research area. The earliest studies of child development go back at least to the 1850's.[4] The number of studies increased through the 1890's and early 1900's, but most of these were the reports of observations of only one or two subjects. However, by 1921 Baldwin was at work on his research on physical growth at the Iowa Child Welfare Research Station, and by 1925 the first of Gesell's studies of young children had appeared. From that time, studies providing norms against which to look at individual development accumulated rapidly. Concern with the unique growth patterns of individuals was to come later.

The measurement movement. Some of the most important aids to objectivity were provided by the rapid growth of the measurement

[2] National Society for the Study of Education. *Curriculum-Making: Past and Present.* Twenty-Sixth Yearbook, Part I. Bloomington, Illinois: Public School Publishing Company, 1926. 475 p. Distributed by the University of Chicago Press.
National Society for the Study of Education. *The Foundations of Curriculum-Making.* Twenty-Sixth Yearbook, Part II. Bloomington, Illinois: Public School Publishing Company, 1926. 236 p.

[3] One of the most helpful summaries of the work of Thorndike appears in the issue, "In Honor of Edward Lee Thorndike," *Teachers College Record* 41: 695-788; May 1940.

[4] Wayne Dennis. "Historical Beginnings of Child Psychology." *Psychological Bulletin* 46: 224-35; May 1949.

movement. Rice's pioneer work in spelling was published in 1897.[5] By 1916 achievement tests were available for most of the fundamental skills, and by this time there was enough general interest as well as available research for the National Society for the Study of Education to bring out a yearbook on the topic.[6] During this same period Binet's pioneer work was done, and in 1916 Terman brought out the first Stanford revision of the Binet-Simon scale. By the end of World War I, various group intelligence tests were in use.

These early years also saw the application to educational problems of such statistical concepts as coefficients of correlation, a development in which Thorndike's leadership was significant. By 1925 psychologists possessed well-defined techniques for the establishment of norms for specific aspects of development. Techniques for studying the interrelationships among various aspects of development in the individual learner, for understanding his behavior in terms of his own concept of self, and for studying the dynamics of the interrelationships among learners in groups were, for the most part, still to be worked out.

Early applications of research to curriculum problems. In the first quarter-century, what was happening in studies specifically directed toward curriculum improvement? Part of the story is told in the reports of the national committees. For the most part these were groups concerned with special subject areas. Rugg, appraising their work in the Twenty-Sixth Yearbook,[7] points out that they tended to operate within the existing subject-matter framework; that they tended to be deliberative rather than to make scientific studies or to use the results of research already published; and that what research they did tended to be focused on practices within the subject area rather than to raise questions regarding the place of the subject in the curriculum as a whole.

Other reports demonstrated that the research on transfer of learning was beginning to have an influence. Concern grew for a reappraisal of curriculum offerings in terms of the specific activities of the learner in a democratic society. Landmarks in the early theoretical statements are Bobbitt's discussion of the curriculum, the pro-

[5] J. M. Rice. "The Futility of the Spelling Grind." *Forum* 23: 163-72; April 1897.

[6] National Society for the Study of Education. *Standards and Tests for the Measurement of the Efficiency of Schools and School Systems.* Fifteenth Yearbook, Part I. Bloomington, Illinois: Public School Publishing Company, 1916. 172 p.

[7] Harold Rugg. "Three Decades of Mental Discipline: Curriculum-Making via National Committees." Twenty-Sixth Yearbook, Part I, National Society for the Study of Education. p. 33-65.

posals of which are centered around training for occupational efficiency,[8] education for citizenship, education for physical efficiency, and education for social intercommunication; and the Seven Cardinal Principles, as set forth by the Commission on the Reorganization of Secondary Education.[9]

Those who, during this early period of curriculum research, were concerned with preparing the learner to live effectively in his world, saw the function of research largely as determining what knowledge and skills were socially useful.[10] The research techniques were, for the most part, designed to produce an objective tabulation of the skills, information or concepts important in the area under consideration. Many of the word counts leading to basic reading and spelling vocabularies and the error studies in English usage were carried out during this era. Analyses of textbooks and courses of study were made to determine items considered by educators to be of greatest importance. Other studies included job analyses, tabulations of concepts appearing most frequently in newspapers and magazines, collections of opinions of experts, and investigations of the frequency with which concepts and skills actually were needed in daily life.

Research attempts to meet individual differences. The measurement movement provided the tools for other types of studies that affected the classroom experiences of children and youth. Early efforts to meet the needs of individuals had already resulted in a number of administrative plans for grouping, special promotions, or individualization of assignments within the subject fields, of which recent ones such as the Dalton and Winnetka plans are probably the best known. With intelligence and achievement tests available, school systems embarked on a number of scientific studies of attempts to adjust

[8] Franklin Bobbitt. *The Curriculum.* Boston: Houghton-Mifflin Company, 1918. 295 p.

[9] Commission on the Reorganization of Secondary Education. *Cardinal Principles of Secondary Education.* Washington, D. C.: Bureau of Education, 1918. 32 p.

[10] National Society for the Study of Education. *Minimum Essentials in Elementary School Subjects.* Fourteenth Yearbook, Part I, 1915, 162 p. *Second Report of the Committee on Minimum Essentials.* Sixteenth Yearbook, Part I, 1917, 204 p. *Third Report of the Committee on Economy of Time in Education.* Seventeenth Yearbook, Part I, 1918, 134 p. *Fourth Report of the Committee on Economy of Time in Education,* Eighteenth Yearbook, Part II, 1919, 123 p. Bloomington, Illinois: Public School Publishing Company.

W. W. Charters. *Curriculum Construction.* New York: Macmillan Company, 1923. 352 p.

instruction to individual differences.[11] This period, when subject-matter lines were still relatively intact, seems to mark the peak of concern with administrative solutions to the problem of individual differences, as contrasted with solutions that presuppose unit activities, pupil-teacher planning, and other classroom adjustments.

The beginnings of research in the school subjects. Achievement tests also made possible more objective studies of methods in specific subject areas. The larger share of these were in the so-called fundamental skills. By 1924 Gray was able to report 436 scientific studies in reading, and in 1925 he launched his annual "Summary of Investigations Related to Reading."[12] Methods in spelling, handwriting and arithmetic were also studied vigorously in this period. For the most part these early studies focused on techniques for developing skill. Problems of readiness and of educational diagnosis, with their stress on the individual child and on interrelated aspects of development, came later.

Early involvement of school personnel in curriculum research. Curriculum research during the period from 1900-1925 was by no means limited to studies by individuals. Bureaus of educational research began to appear as early as 1912. Scates, in summarizing their history, points out that there were enough research bureaus in universities and city systems by 1915 to allow for the founding of the organization now known as the American Educational Research Association.[13] By the time of the Twenty-Sixth Yearbook, Courtis was able to say that in 75 per cent of the 132 cities he surveyed there had been general curriculum revision within the five years prior to his study.[14] However, there was not much tendency to break from the traditional subject-matter pattern, and only 11 per cent of the cities indicating curriculum revision reported that research had been undertaken for that purpose.

Early steps toward progressive education. Meanwhile, from a limited number of public school systems and from selected laboratory and experimental schools were coming some of the reports, largely of a descriptive nature, that challenged traditional subject-matter

[11] National Society for the Study of Education. *Adapting the Schools to Individual Differences.* Twenty-Fourth Yearbook, Part II. Bloomington, Illinois: Public School Publishing Company, 1925. 410 p.

[12] William S. Gray. "Reading." *Encyclopedia of Educational Research.* (Edited by Walter S. Monroe.) New York: Macmillan Company, 1950. p. 965-66.

[13] Douglas E. Scates. "Research Bureaus." *Encyclopedia of Educational Research,* 1950. p. 1031-1034.

[14] Stuart A. Courtis. "Current Practices in Curriculum-Revision in Public Elementary Schools." Twenty-Sixth Yearbook, Part I. National Society for the Study of Education. p. 119-34.

organizations and textbook-centered teaching.[15] In this first quarter-century there were also theoretical statements that called for a fresh look at the nature of the learner, the world in which he lived, and the learning process. Dewey's *Democracy and Education* appeared in 1916.[16] In 1920 he published *Reconstruction in Philosophy,*[17] one of the most thorough early statements of the experimentalist position, to the effect that the source of values lies in human experience and that values can be derived and tested by research techniques similar to those used in studying other aspects of experience. The Progressive Education Association was founded in 1919. In 1925 Kilpatrick's *Foundations of Method* appeared.[18]

In summary—the first quarter-century. Several summary observations can be made regarding the research of the first quarter-century. First, it was typically done within the existing subject-matter framework. Second, with its emphasis upon efficiency, it tended to be focused on the world in which the learner was eventually to live as an adult, and not to any great extent upon his immediate needs. Third, research workers tended to be concerned with the analysis of what existed at the time, not with questions of values or considerations of what ought to be. In a composite forward-looking statement, the committee responsible for the Twenty-Sixth Yearbook urged, among other recommendations, a more definite effort to consider the needs and interests of the learner in relation to those of society; a greater awareness of the role of the school as an agency for social improvement; greater concern with the needs of the learner rather than subject-matter lines as an organizing element for learning experiences; and continuous and comprehensive curriculum study.[19]

The Depression Years—Increased Concern with the Needs of the Learner in His Society

A comparison of the above recommendations from the Twenty-Sixth Yearbook with statements in 1955 might well lead one to conclude that the research needs of 30 years ago are still the major research needs of today. However, the areas opened for study and the

[15] *Ibid.*, p. 189-362.

[16] John Dewey. *Democracy and Education.* New York: Macmillan Company, 1916. 434 p.

[17] John Dewey. *Reconstruction in Philosophy.* New York: Henry Holt and Company, 1920. 224 p.

[18] William H. Kilpatrick. *Foundations of Method.* New York: Macmillan Company, 1925. 383 p.

[19] National Society for the Study of Education. Twenty-Sixth Yearbook, Part II, Bloomington, Illinois: Public School Publishing Company, 1927. p. 1-28.

new techniques developed in the past 30 years have resulted in a significant accumulation of knowledge both about the learner and about the society in which he lives. The years from 1925 to 1940 were marked, particularly, by a greatly increased interest in the study of the learner as a dynamic organism, and by a number of analyses of our democratic society and of the needs of the learner in that society.

Concern with social analyses and values. The 1930's were depression years and the motivation was strong to analyze social trends, to think about values and to analyze the role of the school in a democratic society. National organizations established committees and commissions to study these problems. Their reports made a significant contribution to educational thinking.[20] This was also the period during which a number of major attempts were made to apply research techniques to the study of the complex social interrelationships in an American community.[21]

Increasing emphasis on the dynamic aspects of learning. In the field of educational psychology, the growing influence was that of Gestalt psychology. Early studies were concerned with perception, but later, with the work of Lewin and others came attempts to focus Gestalt principles upon the dynamics of motivation and the inter-

[20] George S. Counts and others. *The Social Foundations of Education.* Report of the Commission on the Social Studies, American Historical Association, Part IX. New York: Charles Scribner's Sons, 1934. 579 p.

National Education Association and American Association of School Administrators, Educational Policies Commission. *The Purposes of Education in American Democracy.* Washington, D. C.: the Commission, 1938. 157 p.

The President's Research Commission on Social Trends. *Recent Social Trends in the United States.* New York: McGraw-Hill Book Co., 1933. 2 vols.

"The Future of Our Country." *Journal of the National Education Association* 27:9; January 1938.

"What Are Desirable Socio-economic Goals for America?" *Journal of the National Education Association* 23:6-12; January 1934.

[21] As examples, see:

Allison Davis and others. *Deep South.* Chicago: University of Chicago Press, 1941. 558 p.

Robert S. Lynd and Helen M. Lynd. *Middletown.* New York: Harcourt, Brace and Co., Inc., 1929. 550 p.

Robert S. Lynd and Helen M. Lynd. *Middletown in Transition.* New York: Harcourt, Brace and Co., Inc., 1937. 604 p.

W. Lloyd Warner and Paul S. Lunt. *The Social Life of a Modern Community.* New Haven: Yale University Press, 1941. 460 p.; and subsequent volumes in the Yankee City Series.

pretation of behavior in the light of the learner's frame of reference and the total setting in which he is operating.[22] However, this was also the time when Thorndike restated his formulation of the laws of exercise and effect and introduced the term "belongingness," after research that raised questions regarding the importance of the learner's awareness of his goals, the effect on learning of satisfaction in the knowledge that goals have been achieved, and the selectivity of learning in relation to the learner's goals.[23] Dewey's revision of *How We Think* appeared during this same period.[24]

Perhaps of equal importance, as a new emphasis in educational psychology, was a growing tendency on the part of many psychologists to interpret research in terms of its specific setting and emphasis rather than deriving over-all theory from a study done with a particular focus. A trend emphasizing agreements among learning theories appeared.[25] The plans to publish periodically a summary of contrasting theories ended with *Psychologies of 1930*.[26] By 1950 Hendrickson and Blair reported, "the current trend is definitely in the direction of a unification of psychological viewpoints. Most psychologists today do not think of themselves as belonging to a school." [27]

A number of emphases in the field of psychology helped to focus attention on the individual learner as a dynamic organism. The late 'thirties and early 'forties saw the height of the controversies regarding the changing IQ.[28] These early studies, which suggested caution in the classification of learners on the results of intelligence tests, have received support in the more recent work of Eells and others, which focused attention on the influence of cultural factors on the scores of typical intelligence tests and demonstrated the importance of de-

[22] Kurt Lewin. *A Dynamic Theory of Personality*. New York: McGraw-Hill Book Company, 1935. 286 p.

Kurt Lewin. *Principles of Topological Psychology*. New York: McGraw-Hill Book Company, 1936. 231 p.

[23] Robert T. Rock, Jr. "Thorndike's Contributions to the Psychology of Learning." *Teachers College Record* 41: 751-61; May 1940.

[24] John Dewey. *How We Think*. Boston: D. C. Heath and Company, 1933. 301 p.

[25] J. F. Dashiell. "A Survey and Synthesis of Learning Theories." *Psychological Bulletin* 32: 261-75; April 1935.

[26] Carl Murchison, editor. *Psychologies of 1930*. Worcester: Clark University Press, 1930. 497 p.

[27] Gordon Hendrickson and Glenn M. Blair. "Educational Psychology." *Encyclopedia of Educational Research*, 1950. p. 348.

[28] National Society for the Study of Education. *Intelligence, Its Nature and Nurture*. Thirty-Ninth Yearbook, Parts I and II. Bloomington, Illinois: Public School Publishing Company, 1940. 471 p. and 409 p.

veloping culture-fair tests.[29] There was increased concern with the role of emotion in learning.[30] In the area of physical growth, too, individual patterns became the focus of attention. The work of Stolz in the California adolescent studies helped to clarify the concept of the puberal cycle[31] and in 1942 Olson and Hughes drew additional attention to the interrelated aspects of growth with their discussion of the concept of an organismic age.[32]

New techniques for studying the individual in his social setting. The 1930's saw the development of a variety of research techniques for the study of the individual in his social setting. A number of the studies that refined these techniques also produced data that were of major significance for school practice. Moreno's pioneer work in sociometric techniques appeared in 1934.[33] Methods of studying the social climates of groups were being reported by 1940.[34] The values of case study procedures were demonstrated by the Gluecks and by others in studies of delinquency.[35] The development of techniques for large-scale community studies was discussed earlier in this section. This was also the period of the American Youth Commission reports.[36] A little later came preliminary theoretical explorations of the concept of developmental tasks. This attempt to relate the maturation of the learner to the demands made upon him by his society achieved more

[29] Kenneth Eells and others. *Intelligence and Cultural Differences.* Chicago: University of Chicago Press, 1950. 388 p.

[30] Daniel A. Prescott. *Emotion and the Educative Process.* Washington, D. C.: American Council on Education, 1938. 323 p.

[31] Quoted in Lois H. Meek, chairman, *The Personal-Social Development of Boys and Girls,* New York: Progressive Education Association, 1940, 243 p.

[32] Willard C. Olson and Byron O. Hughes. "The Concept of Organismic Age." *Journal of Educational Research* 35: 535-37; March 1942.

[33] J. L. Moreno. *Who Shall Survive?* Washington, D. C.: Nervous Mental Disease Publishing Company, 1934. 440 p.

[34] Kurt Lewin, Ronald Lippitt and R. K. White. "Patterns of Aggressive Behavior in Experimentally Created Social Climates." *Journal of Social Psychology* 10:271-79; May 1939.

Ronald Lippitt. "An Experimental Study of the Effect of Democratic and Authoritarian Group Atmospheres." *Studies in Topological and Vector Psychology, I.* University of Iowa, Studies in Child Welfare 16:43-195; 1940.

[35] Sheldon Glueck and Eleanor T. Glueck. *One Thousand Juvenile Delinquents.* Cambridge: Harvard University Press, 1934. 341 p.

[36] Howard M. Bell. *Youth Tell Their Story.* Washington, D. C.: American Council on Education, 1938. 273 p.

Homer T. Rainey and others. *How Fare American Youth?* New York: D. Appleton-Century Co., 1937. 186 p.

widespread attention in the late 1940's.[37] Psychoanalytical theory of this period also reflected growing concern with the influence of the social setting, as witnessed by the writings of Horney and of Plant.[38]

Broadening scope of the measurement movement. With new emphases in research came new instruments. Among the most significant for the curriculum worker concerned with the evaluation of modern school practices were the attempts of Wrightstone, Tyler and others to find ways of measuring critical thinking and other aspects of learning not appraised by the typical achievement test.[39] Also of major importance was the development of sociometric techniques, which made it possible to look more objectively at classrooms in which one of the stated aims is to help children and youth learn to work together more effectively.

The growing concern with the individual learner was reflected in a number of instruments of help in the guidance of children and youth. The *Rorschach Test* was first published in 1925; the *Murray Thematic Apperception Test* came a dozen years later. Strong brought out his first version of his vocational interest test in 1927. Doll's *Vineland Social Maturity Scale* appeared in 1936. During the same period Hartshorne and May were experimenting with situational tests of character traits.[40]

In the period from 1925 to 1940 there was a rapid increase in the application to education of statistical procedures designed for the study of complex problems. This was the time when Spearman and then Thurstone demonstrated ways of applying the methods of factor analysis to the study of intelligence.[41] Analyses of variance and covariance and multiple correlations were other techniques to receive attention.

[37] Robert J. Havighurst. *Developmental Tasks and Education.* Chicago: University of Chicago Press, 1948. 86 p.

[38] Karen Horney. *The Neurotic Personality of Our Time.* New York: W. W. Norton and Company, 1937. 299 p.

James S. Plant. *Personality and the Cultural Pattern.* New York: The Commonwealth Fund, 1937. 432 p.

[39] J. Wayne Wrightstone. *Appraisal of Newer Elementary School Practices.* New York: Teachers College, Columbia University, 1938. 221 p.

[40] Hugh Hartshorne and Mark A. May. *Studies in the Nature of Character.* New York: Macmillan Co., 1928-30. 3 vols.

[41] Charles E. Spearman. *The Abilities of Man, Their Nature and Measurement.* New York: Macmillan Company, 1927. 413 p.

L. L. Thurstone and Thelma Gwinn Thurstone. *Factorial Studies of Intelligence.* Chicago: University of Chicago Press, 1941. 94 p.

Changing emphases in curriculum development. By the early 1940's psychologists and sociologists had made a significant start in developing techniques for the study of individual children and the dynamics of interpersonal relationships. Furthermore, the growing interest in looking at the child as a dynamic organism not only resulted in the accumulation of a substantial body of research but, perhaps more important, led to formulation of hypotheses that have been a continued stimulation to research up to the present day. However, in spite of this greatly increased understanding of the learner, psychological research focused on classroom procedures was meager. From the curriculum worker's standpoint, the attempt to draw specific implications for the curriculum from the field of child development in the Thirty-Eighth Yearbook of the National Society for the Study of Education is noteworthy. It is significant that the bulk of this volume is centered around the traditional subject-matter areas, and that Washburne, in explaining this, says:

> We have general developmental data, unrelated to school experiences, and these have been summarized in Section 1. With the exception of some studies of children's interests, however, practically all studies dealing with the curriculum, even in the broadest sense of that word, have been made in connection with relatively isolated subject matter. This is perhaps unfortunate in view of the present tendency toward using large units of work, based on children's interests, and toward developing broad, inclusive outcomes.[42]

How was the increased concern with the needs of the learner in his society reflected in studies specifically focused on the curriculum? Perhaps most significant are the first large-scale attempts to break away from traditional subject-matter patterns. The Virginia course of study, usually recognized as a pioneer effort in this direction, was published in 1934.[43] At about the same time, the California State Department brought out its teachers' guides to child development.[44] While the two volumes from California did not propose the complete reorganization of content seen in the Virginia course of study, they

[42] National Society for the Study of Education. *Child Development and the Curriculum.* Thirty-Eighth Yearbook, Part I. Bloomington, Illinois: Public School Publishing Company, 1939. p. 53-54. Distributed by University of Chicago Press.

[43] Virginia State Board of Education. *Tentative Course of Study for Virginia Elementary Schools: Grades I-VII.* Richmond: the Board, 1934. 560 p.

[44] California State Department of Education. *Teachers' Guide to Child Development.* Manual for Kindergarten and Primary Teachers. Sacramento: the Department, 1930. 658 p.

California State Department of Education. *Teachers' Guide to Child Development in the Intermediate Grades.* Sacramento: the Department, 1936. 631 p.

were a significant early effort in course-of-study writing aimed at helping the teacher function with maximum effectiveness.

Research attempts to study newer curriculum practices. Committee deliberation, with the involvement of large numbers of teachers, was the technique used most extensively in the first large-scale efforts toward new curriculum design. However, this was also a period that saw some of the first research attempts to evaluate modern proposals. Most of the research reported in the 1931 and 1934 issues of the *Review of Educational Research* on the curriculum was grouped under traditional subject-matter areas. The 1937 issue, however, provides a chapter on "Reorganization of Subjects" and one on "Activity Curriculums." [45]

The early studies were largely attempts to use traditional achievement tests to appraise progress, but with the gradual development of new measurement devices (discussed earlier in this section) came research attempts to evaluate growth in such areas as critical thinking, social attitudes, work habits, study skills, personal-social adjustment. The Eight-Year Study is one of the earliest and most thorough efforts to make a systematic appraisal of experimental high school programs which had such aspects of growth among their stated goals.[46] By the early 1940's there had been enough testing of specific aspects of progressive methods to warrant the publication of such summary statements as those of Wrightstone and of Leonard and Eurich.[47]

Changing focus in the psychology of school subjects. Within traditional subject areas, there was a distinct shift of focus. In contrast to the word counts, lists of concepts, and activity analyses of the earlier years, the concern of the 1930's was with the applicability of the subject to the learner's problems of daily living.[48] Research in the traditional fundamental skills also reflected a greater awareness of

[45] *Review of Educational Research* 1, January 1931; 4, April 1934; 7, April 1937.

[46] W. M. Aikin. *The Story of the Eight-Year Study.* New York: Harper and Brothers, 1942. 157 p.

[47] J. Wayne Wrightstone, *op. cit.*

J. Paul Leonard and Alvin C. Eurich. *An Evaluation of Modern Education.* New York: D. Appleton-Century Co., 1942. 299 p.

[48] As examples, see:

Progressive Education Association, Commission on Secondary School Curriculum. *Science in General Education,* 1938, 591 p. *Language in General Education,* 1940, 226 p. *Mathematics in General Education,* 1940, 423 p. *The Social Studies in General Education,* 1940, 401 p. New York: D. Appleton-Century Co.

W. Wilbur Hatfield, chairman. *An Experience Curriculum in English.* Report of the National Council of Teachers of English. New York: D. Appleton-Century Co., 1935. 323 p.

the learner as an individual. From 1925 to 1940 there was an increased interest, on the one hand, in problems of readiness, and, on the other, in problems of educational diagnosis. This was the period that saw the widespread acceptance of the concept that guidance is an essential function of the school. While both vocational guidance and the mental hygiene movement have histories dating back to the early 1900's, it took the developments of the 1930's to bring these two emphases together in the schools.

In summary—1926 to World War II. Changes in educational thinking undoubtedly were effected in the period from 1926 to 1940. Assumptions that were frontier thinking in the 1920's were accepted without much question in the professional texts of 1940. However, many of the implications for the classroom were not, as yet, explored in research. Consistently, throughout this period, those who reviewed research commented on the heavy proportion of theoretical or descriptive statements, on the piecemeal quality of the research, and on the need for research instruments designed for the complex problems that were being posed.

From World War II to the Present—Growing Emphasis on the Dynamics of Human Relations

The war years of the 1940's and the first half of the present decade have not brought the large-scale testing of curriculum design that has been indicated as a major research need since the mid-1920's. Nor have they brought the variety of new research emphases that was characteristic of the 1930's. Many of the concerns of the 1930's with the individual as a dynamic organism have continued to yield challenging data. Insightful analyses of the social scene have continued to appear. If a new emphasis can be identified, it is an increased concern with the dynamics of human relationships—as a fundamental aspect of democracy, as an essential in good teaching, as a crucial element in cooperative curriculum improvement, and as a part of the research process itself.

Increasing concern with the teaching of values. In the area of social foundations, there has been an increased concern with the functions of the public schools in the teaching of values.[49] Two yearbooks

[49] A summary of psychological studies of values can be found in William F. Dukes, "Psychological Studies of Values," *Psychological Bulletin* 52:24-50; January 1955.

have explored the theoretical implications of this problem [50] and, more recently, Foshay and Wann described promising research techniques for the study of children's social values.[51] Another important contribution in the study of values has been the work of the Citizenship Education Project, which in 1952 published an analysis of the premises in the tradition of American liberty.[52] Parallel with these concerns has been an increased emphasis on the problem of intercultural education.[53] One of the major difficulties in planning large-scale evaluations of curriculum design is that of appraising growth in values and attitudes. While much of the recent writing has been theoretical rather than of a research nature, the general emphasis seems to be opening some new and hopeful research leads.

New insights into the nature of the learner. In the field of child development, recent studies have been significant in their focus on the learner in his group, classroom or community setting.[54] Depth has been added to the insights into the dynamics of human relation-

[50] John S. Brubacher, editor. *The Public Schools and Spiritual Values.* Seventh Yearbook of the John Dewey Society. New York: Harper and Brothers, 1944. 222 p.

National Education Association, Department of Elementary School Principals. *Spiritual Values in the Elementary School.* Twenty-Sixth Yearbook. Washington, D. C.: the Department, 1947. 351 p.

[51] Arthur W. Foshay, Kenneth Wann and associates. *Children's Social Values.* New York: Bureau of Publications, Teachers College, Columbia University, 1954. 323 p.

[52] *Improving Citizenship Education.* A Two-Year Progress Report of the Citizenship Education Project. New York: Teachers College, Columbia University, 1952. 44 p.

For a challenging brief survey of other studies concerned with citizenship education, see:

Henry Wyman Holmes, ". . . *the last best hope* . . . ," The Inglis Lecture, 1955; Cambridge: Harvard University Press, 50 p.

[53] As examples, see:

Hilda Taba and others. *Diagnosing Human Relations Needs.* Washington, D. C.: American Council on Education, 1951. 155 p.

Hilda Taba and others. *Intergroup Education in the Public Schools.* Washington, D. C.: American Council on Education, 1952. 337 p.

Learning World Good Will in the Elementary School. Twenty-Fifth Yearbook of the Department of Elementary School Principals, NEA. Washington, D. C.: the Department, 1946. 366 p.

Hilda Taba and William Van Til. *Democratic Human Relations.* Sixteenth Yearbook of the National Council for the Social Studies. Washington, D. C.: the Council, 1945. 155 p.

[54] As examples, see:

Ruth Cunningham and associates. *Understanding Group Behavior of Boys and Girls.* New York: Teachers College, Columbia University, 1951. 446 p.

August B. Hollingshead. *Elmtown's Youth.* New York: John Wiley and Sons, 1949. 480 p.

ships by an increasing concern with the implications for the interpretation of behavior of the child's concept of self.[55] Psychoanalytical interpretations of behavior have continued to explore the influence of the culture.[56] This is the period that saw the publication of the work of Eells, Davis and others on the influence of the culture on the measurement of intelligence.[57] The concept of developmental tasks has recently been explored in greater detail.[58] Significant, too, is a new emphasis in the design and in the style of reporting of some of these studies. There have been efforts both to involve teachers directly in the research, through action-research techniques, and to write with such detail and such wealth of illustration that teachers are aided in studying their own groups.[59]

Growing interest in the process of curriculum improvement. What has been the trend in research directed specifically toward curriculum improvement? Certainly, the past 15 years have seen numerous efforts to spell out the implications for classroom practice of the accumulated research in psychological and social foundations. Curriculum workers now have at hand a substantial number of texts, all of which embody many of the same general principles. However, much of the actual research relating directly to classroom procedures is still to be done.

Meanwhile, interest in the process of curriculum change has continued to grow. Whereas the January 1931 curriculum issue of the *Review of Educational Research* contained no chapters focused specifically on this problem, three of the six chapters in the June 1954 issue explored aspects of it. In 1951, Mackenzie and Bebell noted that group procedures were included as part of almost every discussion of curriculum change. They concluded, "In fact, the emphasis upon

[55] Donald Snygg and Arthur W. Combs. *Individual Behavior.* New York: Harper and Brothers, 1949. 386 p.

Arthur T. Jersild. *In Search of Self.* New York: Bureau of Publications, Teachers College, Columbia University, 1952. 141 p.

[56] Erik H. Erickson. *Childhood and Society.* New York: W. W. Norton and Company, 1950. 397 p.

[57] Kenneth Eells and others, *op. cit.*

[58] Robert J. Havighurst. *Human Development and Education.* New York: Longmans, Green and Company, 1953, 338 p.

[59] As examples, see:

Helping Teachers Understand Children. Prepared for the Commission on Teacher Education, American Council on Education. Washington, D. C.: the Council, 1945. 468 p.

Ruth Cunningham and associates, *op. cit.*

Arthur W. Foshay, Kenneth D. Wann and associates, *op. cit.*

this matter has been so great as to suggest that preoccupation with it may be limiting study in other directions."[60] However, they also pointed out that actual research relating to the group process on curriculum change was not very frequent.

In 1954, Passow summarized the emphases in the area of organization and procedures for curriculum improvement as follows:

(a) Widest possible participation in planning, testing, and evaluating by all persons—professional and lay—who are affected by policy and action decisions; (b) assignment of the individual school to a more central role in curriculum activity; (c) use of groups for initiating, planning, executing, and coordinating improvement efforts; (d) fusion of supervision, in-service education, and curriculum activity to concentrate personnel and processes for the improvement of instruction; (e) experimentation with procedures and devices for more effective involvement; (f) extension of kinds and uses of consultative services from many sources—central office, state department, universities and colleges, for example; (g) use of cooperative research in field situations for improving practices; (h) teamwork from many levels in cooperative enterprises; and (i) development of more effective and widespread leadership.[61]

Recent theoretical statements regarding the process of curriculum change have ranged from the extended analyses of Benne and Muntyan and of the writers of the 1951 Yearbook of the Association for Supervision and Curriculum Development[62] to Storen's helpful little volume.[63] Concrete reports of school systems in action are also beginning to appear.[64]

The growing concern with human relations in curriculum improvement can also be noted in an increased emphasis on the joint determination of needs by teacher and pupils. *Cooperative Procedures in*

[60] Gordon N. Mackenzie and Clifford Bebell. "Curriculum Development," *Review of Educational Research* 21:231; June 1951.

[61] A. Harry Passow. "Organization and Procedures for Curriculum Improvement." *Review of Educational Research* 24:221; June 1954.

[62] Kenneth D. Benne and Bozidar Muntyan. *Human Relations in Curriculum Change.* New York: Dryden Press, 1951. 363 p.

Association for Supervision and Curriculum Development. *Action for Curriculum Improvement.* 1951 Yearbook. Washington, D. C.: the Association, NEA, 1951. 248 p.

[63] Helen F. Storen. *Laymen Help Plan the Curriculum.* Washington, D. C.: Association for Supervision and Curriculum Development, NEA, 1946. 75 p.

[64] As examples, see:

Hollis L. Caswell and associates. *Curriculum Improvement in Public School Systems.* New York: Teachers College, Columbia University, 1950. 462 p.

Ronald C. Doll and associates. *Organizing for Curriculum Improvement.* New York: Teachers College, Columbia University, 1953. 77 p.

Learning is one of the most extensive action-research attempts to analyze what this means in terms of the dynamics of pupil-teacher planning.[65] Much of recent research has been summarized in Simpson's detailed discussion of the implications of a problem-solving approach for the improvement of teaching-learning processes.[66] A theoretical analysis of what this general point of view might mean for curriculum design has come from the Horace Mann-Lincoln Institute of School Experimentation.[67]

Involvement of teachers in curriculum research. In terms of research techniques, the current emphasis in the curriculum field is, to a very great extent, upon exploring the potentialities of action research as a means of curriculum improvement.[68] One of the early major attempts to involve teachers in a scientific study of their problems is reported by the staff of the Southern Association Study in Secondary Schools and Colleges.[69] Because the action-research concept is recent, much is still to be learned about its effectiveness. It offers at least four emphases that are relatively new. First, there is concern with the applicability of the study to the immediate situation in which it is conducted. Second, there is a concern with the involvement of teachers and a conviction that teachers will grow through that involvement (this point is expanded in pages 38 to 40 of this chapter). Third, in the studies that have been reported, there has been a disposition to try to operate within the complex dynamics of the classroom. Fourth, there has been concern with analyzing the cooperative process, and with the training of leaders.[70]

Up to the present, some of the most extensive action-research studies [71] published have been those from the Horace Mann-Lincoln

[65] Alice Miel and associates. *Cooperative Procedures in Learning.* New York: Bureau of Publications, Teachers College, Columbia University, 1952. 512 p.

[66] Ray H. Simpson. *Improving Teaching-Learning Processes.* New York: Longmans, Green and Company, 1953. 487 p.

[67] Florence B. Stratemeyer, Hamden L. Forkner, Margaret G. McKim and associates. *Developing a Curriculum for Modern Living.* New York: Teachers College, Columbia University, 1947. 558 p.

[68] Stephen M. Corey. *Action Research to Improve School Practices.* New York: Teachers College, Columbia University, 1953. 161 p.

[69] "The Southern Study." Reprinted from the *Southern Association Quarterly* 10: 242; February and August, 1945.

[70] A. Harry Passow and others. *Training Curriculum Leaders for Cooperative Research.* New York: Bureau of Publications, Teachers College, Columbia University, 1955. 158 p.

[71] As examples, see: Ruth Cunningham and associates, *op. cit.*; Arthur W. Foshay, Kenneth D. Wann and associates, *op. cit.*; Alice Miel and associates, *op. cit.*

Institute and its cooperating schools. However, an increasing number of reports are beginning to come from public school systems. These studies are being made both at the state and at the local level.[72] On a national scale, the work of the Association for Supervision and Curriculum Development in publicizing studies and in analyzing procedures has been of particular value.[73] They illustrate the possibility that such studies, when well conceived and executed, may point the way in finding solutions to classroom problems through research techniques that have been developing over many years of fundamental research. In addition, they suggest that research may be a significant aid in helping teachers to grow in professional competence.

Where Do We Stand?

What is the picture at the end of over 50 years of educational research? Certainly, assumptions regarding the nature of the learner, the learning process, and the role of the school that were frontier thinking in 1926 are accepted without much question in the professional writing of 1956. Certainly, also, there are major curriculum problems for which solutions, projected in theory, still have to be tested by research.

A substantial body of research is available. The amount of research now available to the curriculum worker is considerable. One has only to examine the *Encyclopedia of Educational Research,* the issues of the *Review of Educational Research,* the yearbooks of various national societies, the journals of child development, or any typical professional text to realize how vast the accumulation is.

In education, as in other fields of human endeavor, we are not

[72] As examples, see:

Illinois Secondary School Curriculum Program. *Guide to the Study of the Curriculum in the Secondary Schools of Illinois.* Springfield: State Department of Education, 1948. 42 p.; and subsequent publications of the Illinois Secondary School Curriculum Program.

Michigan Association for Supervision and Curriculum Development. *A Look at Cooperative Action Research in Michigan.* Lansing: Michigan Education Association, 1954. 112 p.

[73] Robert S. Fleming. "An Inventory of Action Research Now Underway, Spring, 1954." Washington, D. C.: Association for Supervision and Curriculum Development, NEA, 43 p. (mimeographed)

Readers who wish to keep informed regarding new developments will find very helpful the column on "Curriculum Research" in *Educational Leadership,* and the issues of this periodical for May 1955 (12: 449-520) and for April 1956 (13: 397-460).

yet putting to use all that we know. This fact can be seen in the existence of teaching techniques in spelling that pay little or no attention to the learner's word-study skills, the current controversies regarding the most effective use of phonics in the reading program, the persistence of comments relating to the mental discipline values of "tough" subjects, the prevalence of lecture and recitation methods, the existence of practices that fail to recognize principles of mental health, and the presence in many courses of study at the elementary-school level of concepts unsuited to the maturity of the learners for whom they are recommended. Nevertheless, we have moved far from the time when "progressive" teaching was to be found only in selected experimental and laboratory schools and in a limited number of public school systems. If there is not universal practice of the best we know, there is at least general acceptance in theory of many basic principles to which research has made a significant contribution.

Even a casual survey suggests that the research over the past 50 years is meager in comparison with what needs to be done. For example, Good and Scates[74] give a twelve-page bibliography of articles dealing with unsolved problems and needed research. This snowballing of research needs is inevitable. Not only does each new problem suggest a score of others, but each new technique or research instrument makes possible a fresh approach to areas that have already been partially explored. Furthermore, the changing nature of our society continually poses new problems. The teachers of 1925 were not concerned with television as a teaching aid; they did not face with the same urgency the problem of contributing effectively to international understanding; nor did they face to the same degree the problem of how best to provide the experiences needed to equip a child or youth to play an effective role in his changing society.

As the history that has just been sketched reveals, some research emphases are more recent than others. As a result, curriculum workers today have more data upon which to draw in some areas than they have in others. There are also better defined research techniques in some areas than there are in others. The following list suggests where future research may need to be focused. It is, in part, an analysis of trends in educational research over the past half-century and, in part, a synthesis of the typical lists of needed research to be found in the literature.

[74] Carter V. Good and Douglas E. Scates. *Methods of Research*. New York: Appleton-Century-Crofts, 1954. p. 120-32.

1. We have developed more effective research techniques for studying social and economic trends than we have research techniques for the derivation and validation of values.

2. We have clearer analyses of the social and economic trends in our society than we have of our value systems.

3. We have more analyses of aspects of our society from specific disciplines than we have interdisciplinary studies exploring the implications of such findings for human living.

4. We know more about trends in our society than we do about the implications of these trends in terms of children and youth growing up in that society.

5. We know more about norms for separate aspects of development than we do about the interrelationships among these aspects of development in the growing organism.

6. We have more techniques for studying the learner in the light of norms and averages than we have techniques for studying him in the light of his goals and his concept of himself.

7. We know more about learners as individuals than we do about the interrelationships among learners in groups.

8. We know more about learners' interests than we do about day-by-day problems of living they are trying to handle.

9. We know more about general processes of maturation than we do about the developmental tasks which each new stage of maturity brings.

10. We know more about how to organize a classroom or school for effective learning than we do about how to decide what should be taught.

11. We know more about how to develop skills such as reading and handwriting, and about how to teach facts, than we do about how to develop concepts or attitudes.

12. We know more about how to study the outcomes of a child's work than we do about how to study the processes by which he works —the steps he takes in solving an arithmetic problem, the way he reasons in drawing conclusions.

13. We have more techniques for evaluating growth in skills and knowledge than we have techniques for evaluating growth in such areas as attitudes and feelings.

14. We know more about planning for the effective learning of children and youth than we do about planning for the effective learning of those who are to teach them.

15. We know more about achieving effective interpersonal relations in the classroom than we do about achieving effective interpersonal relations in the faculty of a whole school system.

There is a marked lack of research in the classroom setting. One of the needs most frequently identified in surveys of curriculum research over the past 50 years is for studies made in classroom settings. Almost every summary of the research on general methods to which this writer turned ended with the statement that attempts to establish the general superiority of a method outside of a particular classroom setting are likely to be of limited value.

If research is to make a significant contribution to classroom practice, ways of working within the dynamic situation must be devised. The elements complicating the problem are many—the multiple goals appropriate for the given group of learners, the range of ability and maturity in the group, the community setting, the classroom atmosphere, the teaching materials available, the skill of the teacher himself. We are as yet only in the early stages of developing techniques appropriate for the study of specific problems in settings so complex.

Much progress has been made toward more effective classroom practice, even though research in the classroom setting has not always been available. We are operating today, in many instances, on widely accepted assumptions derived from psychological and sociological studies of the learner and of society and from philosophical considerations of the role of the school. If research techniques are to contribute to curriculum improvement, many of the implications for action based on these assumptions may need to be re-examined. Often, too, the assumptions themselves are vague, overgeneralized, and in need of study. The following suggest the types of problems we face:

1. We accept the general assumption that the role of the school is to prepare the learner for effective living in our society, but we have little evidence regarding the type of curriculum design most likely to achieve this goal.

2. We are in substantial agreement that it is important to develop ability to think creatively, to be self-directing, to work cooperatively, but we are just beginning to learn what classroom practices will best achieve these goals.

3. We assume that the most effective motivation is intrinsic, but we have much to learn about the respective roles of teacher and pupils in the determination of goals; about the respective roles of pupil interest, need and purpose in the establishment of goals; and about

the most effective functioning of pupil-teacher planning. We have much to learn, also, about how to study the learner in order correctly to identify his goals.

4. We accept the concept of maturation, but we have much to learn regarding the degree to which physiological growth patterns actually affect learning.

5. We accept the concept of readiness, but we have meager evidence regarding the role of classroom experiences in developing readiness, and much to discover regarding the appropriateness of various methods for pupils of different maturity levels.

6. We accept the concept of individual differences, but we do not yet have the evidence we need to plan the most effective program for gifted children; we do not yet have much research as a guide to the developmental tasks faced by slow learners; neither have we tested thoroughly in practice the range of possibilities for the effective grouping of learners.

7. We operate on the general assumption that learning comes through experience, but we need more evidence regarding the types of experiences most effective for different maturity levels, backgrounds and levels of intellectual ability. We also need more help in determining how the goals, needs and background of the particular learner influence the structure of an experience for him.

8. We accept the concept that we are teaching the "whole" child, but we have much to discover regarding the influences upon learning of the affective tone of the classroom, of the child's feeling of security and of his personality patterns.

9. We are in substantial agreement that evaluation should be a continuous process, but we do not yet possess the techniques we need to measure progress toward all our goals, nor do we know much about the effect of various methods of evaluation upon the learning process.

There is need for over-all studies of curriculum design. Almost every outline of needed research in the field of curriculum improvement examined by this writer indicated the importance of over-all studies of curriculum design. This is perhaps the most complex problem facing curriculum workers today. It is complex because values are inextricably involved. Each proposal of scope, sequence and organization is based on a specific set of values regarding the nature of our democratic society, the knowledge and skills that are of most worth, and the role of the school. Does not each proposed design,

therefore, have to be evaluated against its own stated goals? If this is so, how can there be studies planned to demonstrate whether one design is "better" than another? Is it possible, perhaps, to identify common values in the light of which differing proposals may be appraised? There is need both for large-scale appraising of specific proposals, and for a vigorous attempt to find common grounds upon which comparisons of the effectiveness of various designs can be made.

Many other factors make the problem of over-all appraisal of curriculum design complex. In the first place, only a start has been made in the process of defining values in terms of specific and identifiable behavior. What shall be taken as evidence that a group of ten-year-olds are learning to work cooperatively, or that, from a mental hygiene point of view, a twelfth grader is a "well-adjusted" individual? More complicated still, what is the relationship between the way a child regards himself, the way he behaves, and the way the group behaves toward him?[75] By what do we appraise a youngster's social relationships with a group, his position on a sociogram or his feeling that children do or do not like him? Then, too, educators tend to set long-term goals. This raises the question of the need of long-term follow-up studies and the problem of whether it is possible to differentiate between the contribution of the school and that of other educative forces in the child's life.

Because the learner's experiences, rather than the written course of study, constitute the actual curriculum, any testing of over-all design seems necessarily to involve problems of determining how effectively the design under consideration is being executed. Such studies may need to precede any attempts of over-all appraisal. Teaching within the logical boundaries of American history, for example, does not necessarily call for the memorizing of dates and facts, nor does a high school course in geometry have to consist largely of the memorizing of theorems. Problems such as how to operate most effectively in the joint determination of needs or how to organize learning activities most effectively to care for individual abilities and needs are, if anything, even more complex.

Present status, then, with regard to studies of over-all design indicates many types of problems still to be attacked.

[75] For example, see:
Leland D. Stier. "A Comparison of Self-evaluation, Peer-evaluation, Teacher-evaluation and Standardized Test Results on Personality and Achievement Factors in the Fifth and Eighth Grades." Unpublished doctoral dissertation. Berkeley: University of California, 1948.

1. There is need for the development of procedures for the identification and validation of values, both those that relate to specific proposals of curriculum design and those that are common to several proposals.

2. We need techniques for spelling out these values in terms of behavior.

3. There is need for extensive studies planned to appraise specific proposals of curriculum design in terms of their stated values.

4. There is need for studies comparing the effectiveness of differing designs in areas where values are held in common.

5. The results of classroom studies, such as those suggested in the preceding section, may need to be implemented in action before the design as a whole can be appraised.

6. Ways and means need to be explored to establish studies comprehensive enough and extensive enough in time to provide the large-scale testing of over-all design.

7. Consideration might well be given to means of attacking aspects of the problem of evaluating over-all design through small-scale classroom studies, and to means of coordinating such studies.

8. There is need to develop means whereby evidence can be gathered from many types of school systems.

9. There may well need to be studies specifically designed to develop greater insights into the contribution of dynamics of the learning process itself to the learner's maximum growth—the role of pupil needs, the influence of the teacher's personality, the rigidity or permissiveness of the classroom atmosphere—as compared with the contribution of any specific proposal of scope and sequence.

Only a start has been made in helping teachers to become research minded. A certain amount of research has been done in the classroom setting ever since the beginning of the scientific movement in education.[76] However, the research workers were more often members of city research bureaus, candidates for higher degrees, or college professors.

The earliest intensive involvement of teachers in curriculum improvement, and the most frequent involvement still, came in their participation as members of committees producing courses of study. The typical organization of personnel, as seen by Hopkins in 1931, was as follows:

[76] B. R. Buckingham. *Research for Teachers.* Chicago: Silver Burdett, 1926. 386 p.

First, a responsible head, usually called the curriculum director, has entire charge of the whole program. He works under the direction of the superintendent of schools or the commissioner of education. Second, a general advisory committee aids in determining the aims and objectives, guiding principles, the program of studies, and the general administrative setup. Third, committees composed primarily of teachers actually produce courses of study in designated fields under the direction of the curriculum director, and such other people as he may designate. The area of responsibility is determined by the school system. This assignment may vary from the construction of a unit of work for part of a year to the making of courses of study for the entire subject throughout the school system. Fourth, a committee usually accepts responsibility for experimentation and tryout of courses of study during or after the process of construction. This experimental committee is usually composed of principals, supervisors, and members of the research staff. Fifth, provision is sometimes made for a reviewing committee to pass upon the completed product before it is accepted by the curriculum director and presented to the superintendent. Sixth, a committee usually accepts responsibility for installing courses of study. This group is composed of principals, supervisors, directors, and classroom teachers. Sometimes one committee serves for the installation of all courses of study, and often there is a separate committee for each. Seventh, a program of continuous revision is accepted and provision is made for rotating committee members to promote in-service training of teachers and more effective course of study production.[77]

By 1937 Caswell reported a trend toward much more active involvement of teachers.

Recent programs . . . are stressing more and more utilization of the same technics of learning in the curriculum development program as teachers employ with children. It is held that teachers can improve the curriculum only as they broaden their insights, deepen their interests, and improve their technics. Consequently, emphasis is placed upon voluntary participation, democratic procedures, provision of varied experiences which contribute to the growth of teachers, and curriculum changes which emerge from the classroom.[78]

This was not recognition of the value of teacher participation in research to any great extent, however. In the Thirty-Seventh Yearbook of the National Society for the Study of Education,[79] the chapter

[77] L. Thomas Hopkins. "Curriculum Making: General." *Review of Educational Research* 1:7-8; January 1931.

[78] Hollis L. Caswell. "Plans for Curriculum Building and Research." *Review of Educational Research* 7:122-23; April 1937.

[79] Walter S. Monroe. "General Methods: Classroom Experimentation." *The Scientific Movement in Education.* Thirty-Seventh Yearbook, Part II, National Society for the Study of Education. Bloomington, Illinois: Public School Publishing Company, 1938. 529 p.

on classroom experimentation was concerned with such factors as the control of variables and the rotation of groups, but not with the role of the teacher as experimenter.

Even as late as 1951, the yearbook on *Action for Curriculum Improvement* of the Association for Supervision and Curriculum Development does not list the word "research" or the term "experimental program" in its index, although there is a chapter devoted to evaluation and mention of the use of experimental procedures throughout the book.[80]

By 1950, however, the action-research concept, with its dual emphasis upon the importance of studies at the local level and the values accruing to those involved in such studies, was beginning to make itself felt. This seems to be the first large-scale effort to involve teachers in the research process. Analyses such as that by Corey, reports of studies such as those carried out by the Horace Mann-Lincoln Institute and its cooperating schools, workshops sponsored by a number of professional groups including the Association for Supervision and Curriculum Development, and leadership in a number of school systems have helped to develop a rather rapid interest in the potentialities of action research as a means of curriculum improvement.[81]

No single research technique will solve all curriculum problems. The contributions of the philosopher, the psychologist and the social scientist are essential in the development of basic insights about the individual and the society in which he lives. However, curriculum improvement will come about as there are actual changes in the day-by-day classroom experiences of boys and girls. The recent emphasis on action research suggests that this is more likely to happen when teachers themselves work cooperatively with consultants from many fields in the solution of educational problems.

Is this a concept of the function of curriculum research that we need? It is a far cry from the precise delimitation of scope and sequence envisioned by the scientific workers of the first quarter of this century. It would call for the cooperative efforts of persons from many disciplines, for a continuous and coordinated effort to develop new techniques and to identify new frontiers, for constant probing into questions of values. It would imply change, orderly but continuous. Can research become a "cutting edge" that will assure continuous curriculum improvement?

[80] *Action for Curriculum Improvement, op. cit.*
[81] See p. 31-32 of this chapter.

Section 2

The Research Process

THE FOUR CHAPTERS in this section deal with the phases through which any organized research passes: problem identification (Chapter Three); achieving a focus (Chapter Four); handling data (Chapter Five); obtaining meaning from research (Chapter Six). The authors of these chapters have undertaken the difficult task of clarifying these phases of research, but each author—and the Yearbook Committee—recognizes that research does not proceed in an orderly fashion from one phase to another. While these phases are superficially analogous to the "steps" of problem solving, it must be recognized that neither research nor problem solving proceeds stepwise. Each phase itself requires that all the other phases be recapitulated. The researcher may be thought of as moving through successive concentric spheres, each of which contains all the preceding experience he has had with the research problem. He pauses at each new point, and takes the entry into the new sphere as his problem. Each author of these chapters, therefore, has felt it necessary to describe the entire research process before he could give emphasis to the phase of the process he intends to clarify. Therefore, we have here four chapters that are both independent of and interdependent upon one another.

Chapter Three

Problem Identification

HILDA TABA

THERE IS MUCH NEED in curriculum development for practical action research, over and above general educational research. First, there are many problems which require restudy in the practical setting, even though general knowledge regarding these problems is already available. Principles derived from general research need to be re-examined in the light of their application in a particular practical situation to be of real value to solving curriculum problems and to making changes in curriculum. For example, while a good deal is known about the general nature of developmental tasks, and their bearing on learning, little is known about the variation of these tasks by socioeconomic class culture, by ethnic or racial backgrounds or by variations in social learning introduced by family styles. Hence, if this concept is to bear fruit in curriculum and teaching, its application needs to be studied in many different practical situations.

With a similar emphasis, Corey points out that "most of the study of what should be kept in the schools and what should go and what should be added must be done in hundreds and thousands of classrooms in thousands of American communities. The studies must be undertaken by those who may have to change the way they do things as a result of these studies." [1]

Further, the influence of research or of the scientific attitude on school practice is small unless these very methods are adopted by the practitioner. As Lippitt points out in connection with training community workers,[2] there is a tremendous untapped resource for the advancement of knowledge and for improved orientation toward action

[1] Stephen M. Corey. *Action Research to Improve School Practices.* New York: Bureau of Publications, Teachers College, Columbia University, 1953. p. 8.

[2] Ronald Lippitt. *Training in Community Relations Toward New Group Skills.* New York: Harper and Brothers. 1949. 258 p.

in activities which incorporate the scientific outlook and methods into the repertory of the practitioner.

Hilgard even suggests that a greater emphasis on practical problems of education, with all their complexity, might be a way of revitalizing educational research: educational research has impoverished itself, because everything that is interesting about learning and teaching has been left out for the sake of simplicity.[3]

This chapter on problem identification and analysis is specifically devoted to describing the processes and problems connected with such practical action research. While it is not supposed that these processes differ fundamentally from those faced by any kind of research, certain unique procedures and problems of such an approach to curriculum need to be pointed out.

First, in this type of action research essential steps are carried on by those who are concerned with the problem, namely, the educational practitioners. They select the problems, secure the necessary data, and pursue their action implications. If research technicians are involved, they serve as consultants and as trainers: developing methods of analyzing problems, helping with the research design, devising or suggesting study techniques and advising on methods of handling and interpreting data. This means, then, that the research team needs to include both practitioners and research consultants. It means that the procedures of such research generally need to aim at two things simultaneously: to produce evidence and insights on which to base changes in school practice, and to change those who are making the changes; that is, to enhance the insights of the teachers, to alter their attitudes, to extend their perspective on the learning process or to master the needed skills in fact finding and in use of evidence.

Second, from the very start, the action emphasis needs to be taken seriously. The problems are chosen because of their importance to practice in a given situation. The research process is oriented toward discovering from the data principles and insights needed to throw light on changes that need to be made: to solve a problem, to alter ways of teaching, to suggest a different organization of subject matter, a different way of treating students.[4]

Third, while such studies may have general significance in that they may produce evidence and ideas that may have general value, the

[3] Ernest R. Hilgard. "Educational Research: Some Friendly Suggestions." *California Journal of Educational Research* 4:51-55; March 1953.

[4] See Arthur W. Foshay and Max Goodson, "Some Reflections on Cooperative Action Research," *Educational Leadership* 10:411-18; April 1953, on what is involved in relating research to a reality situation.

essential focus is on studying local problems in a local setting. The problems may or may not be new from the standpoint of general research. It is sufficient that they be new in the particular situation. This applies to validity also. The outcomes of such research need not be held up to the criterion of general validity. It is sufficient that the results be valid for the situation to which they apply.[5]

And, finally, this type of research needs to combine research functions with training. It needs not only to produce new data to guide practice, but also to develop more scientifically oriented practitioners, capable of objective analysis of their own processes, disposed to scientific approach to changes in teaching and in curriculum development.

These assumptions inevitably lead to several other criteria regarding the kinds of problems that are appropriate to study. First, the problems must be manageable by those who study them. Since these practical researchers are bound to be persons who are more or less unfamiliar with research techniques and find some difficulty in viewing themselves as researchers, the problems they undertake must not be so complex as to require techniques and tools that these persons cannot manage even under the guidance of research technicians. Ambitious research projects necessitate analyses, techniques and interpretations that leave the practitioner uninvolved. Further, their results are neither clear nor compelling to the teacher, and hence do not influence the practice in the measure that they should.

In school settings, comprehensive and complicated research projects are possible only by fitting many individual research projects into a more comprehensive research design, an altogether feasible undertaking in a school system. Under these conditions one may speak of cooperative research, not only in a sense that each project is carried on by a team of one or more practitioners and a specialist in research, but also in a sense that many small research projects may be planned to contribute to a larger scheme.

Problem Identification and Analysis

Criteria for selecting research problems and difficulties encountered in developing a research approach. What is said above sets some criteria for problem identification as a process and also suggests the difficulties which are implicit in it. First, while it is desirable to select problems which are important to the persons who

[5] See Hilda Taba and Elizabeth Noel, *Action Research as a Method of Curriculum Improvement*, Washington, D. C.: Association for Supervision and Curriculum Development, NEA, 1957, for a case study of such local development.

propose them and at the same time significant for general curriculum development, it is also necessary to select problems which are manageable, in a sense that no more intricate devices are required than the group can handle. This is not easy to do. Curriculum problems are usually complex, and the concerns expressed by teachers tend to reflect this complexity. Often the problems suggested lack specific focus, are too general and vague. For example, one group of teachers wanted to study children's attitudes, but was unable to specify which type. Another group of teachers was interested in improving the techniques with slow learners. They could describe these pupils only as slow, and seemed to assume slowness to be a monolithic quality, which could be identified by some simple method and solved by applying a simple formula. Still another group of teachers wanted to revise a whole sequence of the elementary curriculum.

The first problem is too vague. One needs to identify specific types of attitudes before designing ways of studying them. The second problem needs a more precise definition of slowness and of its causes. The third one is too complex. One needs to re-examine the various curriculum units on each grade level before useful criteria for a sequence can be developed.

Problems identified in this manner are unmanageable. They need to be pared down, focused more specifically or divided into parts to be studied by different individuals before fruitful ways of studying them as a whole can be developed. Teachers cannot act in general, they act in particular. Generalities furnish no clues regarding what to study. Until research is brought down to specifics, it remains impracticable.

This unmanageability also produces psychological reactions which block research altogether or generate unscientific attitudes. The group which was concerned with attitudes debated and argued on an increasingly abstract level, until the relationship of their discussion to their classroom needs disappeared entirely. The teachers who started with a monolithic concept of slow learners found it difficult to face the task of analyzing and discovering the many aspects of their problem. Because this definition made the problem too baffling, it seemed easier to evade it than to work it through. They began to rationalize about why the job should not be done at all. Resistance began to build up against studying the problem: too much time was spent on slow learners anyway, and often to the detriment of the average or fast learner. There must be techniques to help slow learners without using up the time of the rest of the class. Slow

learners should be in remedial classes and thus not delay the average students.

It is also necessary to remember that practitioners, for whom curiosity in research itself is not the main driving force, do not have the incentive to continue a long drawn out research process without the incentive provided by getting some immediate results. Hence, it is necessary to break up the approach to complex problems into manageable steps, each promising some satisfaction.

The reverse difficulty is involved when problems are conceived too narrowly, or in a surface manner, or are hemmed in with questionable assumptions regarding solutions. What to do about disciplining the tardy students or how to manage inattention in seatwork illustrates the latter difficulty. The statement of the concern already assumes *a* solution—namely some form of discipline. Yet, both tardiness and poor management in seatwork are phenomena which may have many different causes and therefore require different solutions: discrepancy between school expectations and the social learning of the students, a curriculum that fails to meet student needs, poor teaching methods, authoritarian or punitive teachers, and so on. When the problem statement already *assumes* a solution or involves a narrower view of the nature of the phenomenon than is appropriate, the solutions are apt to be unprofitable. For teachers it is much easier to see one's immediate difficulties than it is to see the causes of the difficulties. Consequently, most teachers will name a difficulty, not a cause, as a problem. For example: "My students can't read the text." "My class is difficult to control." "My parents don't come to school, especially those that need it most." When this happens, the task is to continue probing until some clues to causes appear and until the more fundamental dimensions of the problem become visible. To produce this larger perspective, problem identification and analysis need to include experiences which at once help uncover the real problem and change the perspective of the teacher.

The research approach requires objectivity, to the extent of examining unwelcome alternatives. Yet, there is a tradition of reasoning from feeling on many curriculum problems. It is not rare for teachers and curriculum workers to espouse certain methods, materials or teaching devices, and to consider them superior to any other method without examining their merits or the merits of the alternatives. History deals with events in time; therefore history should be organized and taught chronologically. The idea that it might be better organized by topics or according to ideas that bring events into focus, seems esoteric and unacceptable.

This reasoning from strong unexamined preferences is aided by the fact that the tradition of rigorous scientific thinking about curriculum is as yet generally not well established. Distinctions are lacking on what is essential and universal and what is not. Curriculum "trends" are espoused on the basis of their concurrence with a set of beliefs and feelings, rather than by their verifiable consequences on learning or contributions to educational objectives. Steps by which to proceed in formulating curriculum are not too well developed. There is a tendency to idolize certain gadgets as self-sufficient, independently of the context in which they need to be used to be productive.

No problem illustrates this difficulty of emotional attachment to *a* solution better than the controversy about homogeneous or heterogeneous grouping in reading. Persons who feel strongly about the benefits of homogeneous grouping are generally those who also assume that the reading process is a simple mechanism of recognizing and sounding words. If one makes this assumption, homogeneous grouping seems an entirely reasonable solution. However, when one assumes that reading is a multiple process in which students' current meanings and feelings figure, in which emotions control what is learned, and which itself has emotional consequences on individuals, then the role of experience, of group motivation, of mutuality in extending meanings, and hence of need for heterogeneity of experience and skill stands out as a distinct possibility. These possibilities, however, are uncongenial to persons who view reading as essentially a self-contained and a simple process of deciphering printed symbols.

This attachment of strong positive or negative feelings to certain alternatives in teaching and curriculum organization makes it difficult for the practitioners to use scientific methods, and produces a tendency to use data to prove what one already believes.

Feelings can handicap a research approach in still another way. In many school situations even a surface identification of concerns and problems presents difficulties. Having problems is considered a black mark on effectiveness. *Good* teachers don't have problems, especially in the presence of other teachers, let alone of their supervisors. Such groups tend to ask abstract, unanswerable rhetorical questions or ones which can be answered by a simple *yes* or *no*, such as, "Do you think art experiences are good for children?" Before real problems can be identified under such circumstances, preliminary work is needed to make having problems and unanswered questions respectable.

One must remember also, that change, and especially experimenta-

tion, be it with new ideas or new ways of teaching, always involves a risk.[6] A risk of doing something new without assurance of succeeding, a risk of proceeding without sufficient skill, a risk of discovering that what one has done is not the best possible, a risk of making mistakes. These risks are threatening, even to teachers who are fairly secure. In many situations making mistakes can be personally threatening or professionally dangerous. This creates a resistance that is not always easy to overcome, especially when it is not understood what the nature of the threat is. In too many instances one hears that teachers simply are not interested in studying their problems, when actually they may be fearful because of their own lack of skill for experimenting.

The presence of these feelings makes it difficult to learn through the use of scientific methods. It is normal and human to try to prove what one already believes, and the research process ordinarily begins in this manner. If the process itself is sound, however, teachers quickly get beyond the area of sheer belief, and open their minds to the possibility of new truths. This task of opening new possibilities creates a double agenda for problem identification and analysis: (a) experiences to develop an adequate vision of the problems to study, and (b) establishing an emotional climate which would permit possibilities to open up which otherwise might remain unavailable for examination because of closed convictions, fears or threats.

Perhaps the most baffling difficulty is that at the start, at least, teachers and supervisors are really concerned with solving problems in the simplest and speediest possible way, and not in conducting research about them. The whole tradition in training and in supervision has led teachers to assume that recipe solutions are possible and that experts can hand these solutions to them. Pressure for immediate answers is strong, partly because of the urgency of the problem, but mainly because of naïveté about scientific thinking and about the complexity of the roots of even the simplest of practical educational dilemmas. The expectations regarding the so-called "problem cases" with emotional difficulties illustrate this difficulty. Supervisors and consultants are expected to call forth a recipe for handling a child from such capsule definitions as that the child is unresponsive, uncooperative, inattentive, or that he fights and throws tantrums. In such cases it is necessary to spend time in creating an awareness that

[6] For further thoughts on effect of human relations on experimentation see A. Wellesley Foshay and James A. Hall, "Experimentation Moves into the Classroom," *Teachers College Record* 51:353-59; March 1950.

such behaviors have multiple causes, and are often produced by the group climate in the school or teachers' own handling of discipline problems. Those concerned with such problems need to face the fact that there are no quick solutions, and that, furthermore, they themselves are about the only ones who can eventually develop adequate solutions after proper study.

The methods used in problem identification need to take account of these difficulties. The approach needs to conform to the research method, and at the same time deal with the feelings of teachers. Some consideration is needed of the attitudes which the consultants and the teachers take toward each other. It would be fatal to proceed from an assumption that action research can be carried on adequately and by concentrating only on action and research. It is often necessary to concentrate on several agenda at the same time: to develop an appropriate approach to the study of the problems and at the same time to create in teachers a more scientific view of educational procedures and a more objective attitude toward their own feelings and predilections.

Steps and Methods in Problem Identification and Analysis

Problem identification and analysis are the first steps in any project involving scientific approach or research. Presumably the entire process involves a sequence which is dictated in part by the requirements of orderly thinking and methodology, in part by the fact that the "researchers" need to learn as they go along, and in part by the inductive procedure involved in starting with the grass roots problems. Identification and analysis are the first steps; they also are more crucial and more complicated than is commonly assumed. Unless the problems to be studied grow out of the identified concerns of teachers, it is difficult to involve them in the research process or to secure their identification with the problem. The quality of problem analysis also determines the quality of the entire research process and of its product: the fruitfulness of the research itself, the extent of participation in it, the motivation to continue even though the solutions are harder to come by than originally anticipated, the extent of cooperative pooling of findings and their application. If the ideas about the problem and what is involved in it are inadequately developed, usually old pieces are placed into new positions and the experimental design for the research or for program planning does not receive the new slant that it needs. When solutions are arrived at directly from the statement of the concerns without analyzing the

fundamental causes, these solutions tend to be stereotyped and fail to get at the root of the matter.

In these first steps lie also the training possibilities: the development of new insights and perspectives, the modification of feelings and attitudes toward the factors in the problem as well as toward the research process itself. When these preliminary steps are skipped or telescoped, an opportunity to re-educate teachers is missed.

Usually there are many pressures to cut short this step, which may seem like a waste of time. The urgencies of practical situations leave no room for dealing with the complications in feelings and needs of teachers, and so on. When such complications arise, teachers, supervisors and research consultants alike are prone to decide that it is impossible to kindle sufficient interest, that cooperation is not forthcoming, or that the problems are too complex to deal with them at all, in place of incorporating procedures necessary for eliminating these human relations difficulties.[7]

Thoughtful planning of problem identification and analysis involves answering a number of questions:

1. What conditions need to prevail both to allow and to invite teachers to state problems of importance to them?

2. In what context do problem identification and analysis produce the maximum of identification, allow for varied levels of involvement depending on the capacity and the insight of individuals, and permit significant problems to emerge?

3. What is the sequence in opening up a problem for research with teachers?

4. What is the timing factor? How is one to gauge how fast or how slowly to proceed, at which point to introduce which considerations?

5. What is a team pattern in guiding action research which yields the greatest possible combined competence. What is the role of the research consultants? of the supervisor? of teachers?

Problem identification itself involves identification of concerns and analysis of these concerns. In practice, problem identification can proceed in several different ways. Sometimes it is necessary to start with a group of teachers, each one identifying his own particular concern, and getting advice from the consultant and from the group

[7] For additional aspects of problem identification see Marcella R. Lawler, "Important Phases of Problem Definition in Curriculum Improvement," *Teachers College Record* 51:537-43; May 1950.

on how to take the next step. In a group situation it is usually necessary to conduct a formal problem census to get an idea of what individuals are concerned with. Occasionally it is possible to see individuals and to converse with them sufficiently to identify what real concerns exist, and what problems underlie these concerns. Often, however, such problems can be identified by supervisors or curriculum consultants in the normal course of the work.

But whether the start is made individually or in groups, it is essential that each person identify his or her concern, and make a start from that. Otherwise interest and motivation are likely to sag, because identification with the problem is weak, or the problem appears unreal to the participants.

This method of starting from the grass roots has its weaknesses. There is a chance of having too many diverse problems to pursue. A general approach to a large problem is less likely to emerge, or to emerge as soon as one would wish. However, with some agility and patience on the part of those responsible for guiding the research processes, eventually it is possible to combine these individual problems and concerns into larger clusters and to enlarge the specific minutiae of the initial statements into more significant problem areas. It is possible for participants themselves to consider the array of specific problems they have suggested, and to discover the larger pattern in them. If the group is not too large, it can, either in buzz groups or in general discussion, regroup the problems and form cooperative clusters around these new areas. In such cases, the evolving pattern of problems becomes the property of the group, not of the consultant. The consultant is then free to reflect upon the pattern and to feed in whatever relevant information he has.

Because the awareness of difficulties is likely to be sharper than the awareness of goals, the problem census tends to yield more challenging statements when the focus is on gaps, blocks and difficulties rather than on goals. Such questions as, "What problems do you have?" "What difficulties do you encounter in your classroom?" "What are the things that you would like to change?" tend to bring better focused statements than do statements centering on goals.

The problem identification process needs to provide for two types of diagnosis, in order that the next steps can be taken with proper considerations in mind. First, the statements of concern need to be analyzed regarding the dimensions of problems and tasks that they may involve. Teachers' statements may be quite a few steps removed from their real concern or from the basic problem. In such a case the next steps need to be directed toward developing a more basic

view of what is involved in the stated problem. Techniques need to be devised to bring the causes of difficulty into focus, and so on.

Another aspect requiring diagnosis is the teacher himself. Various teachers bring to their concerns different kinds of dispositions. Some have genuine concerns and can bring an experimental orientation to these concerns. With such persons it is possible to formulate a research approach right from the start. All they need is help with techniques. Some are shy and retiring, and it is difficult for them to accept new perceptions without fear and trepidation. With such a person the steps leading to a fuller understanding of his problem need to be slower and more carefully formulated. Other teachers bring to their problem definite, though sometimes mistaken, convictions. For these, experiences are needed that will simultaneously help change their viewpoints, break down their current stereotypes and misconceptions, and also develop a better view of the problem itself. Still others may be naïve regarding the implications of their concern. For these a good deal of learning about the basic nature of their concern is indicated. To develop a realistic approach it is further necessary to size up the limitations of the situation under which the teacher works, so that the study and the emerging solutions represent possibilities for application, which are not out of bounds for their situations.

Problem identification yields only a superficial statement of concerns, which often are incapable of a research approach, as was indicated in the section dealing with difficulties. Therefore the identification needs to be followed by a problem analysis: to identify its dimensions, to begin to see what causes may produce the difficulties identified in problem statements, or to identify the underlying but unquestioned assumptions. To serve these purposes analytic questioning in conferences may not be enough. Often preliminary data gathering is necessary before sufficiently adequate analysis is accomplished and the necessary preliminary diagnosis is possible. The more vague and complex the problem is, the more prolonged this step of data gathering and analysis needs to be. If the problem statements involve emotional convictions about the issues involved, threats implied by changes in ideas or by the research process itself, the time needed for this step is longer and greater care is needed in planning the experiences and studies to be undertaken.

Often preliminary data change the "problem." Thus, when the problem of tardiness was introduced as a difficulty, in a form which suggested that the teachers assumed that all were tardy for the same reason, and that therefore a uniform method could be devised to eliminate it, it was suggested that each teacher who had a tardy

student in the past few days, find out what actually took place in that home that particular morning. It turned out that one youngster was tardy because his family had no morning routine, nor a clock by which to determine the time. Different family members went to work at different times, had breakfast at different times, and the pupil, who was alone at the time for leaving for school, often made mistakes about when to start. Another boy had to gather coal from freight yards for his family's fuel. When coal trains were late, he was late, too. A third one was in the habit of looking at displays in store windows on his way to school. When the displays were changed, it took a longer time to examine them. These preliminary data changed the "nature" of the problem of tardiness. In place of one phenomenon, with one cause, and presumably one logical solution, there were several, each of which required a different solution.

After the tardiness problem was thus broken down, it was easy to take measures that reduced tardiness markedly. But the method used in analyzing this problem raised another question. These teachers said, "If we were so far off the real basis in assessing what to do about tardiness, what about the bases for our formal instruction?"

Because this preliminary diagnosis is so important, an initial problem census needs to include enough conversation to learn about the teacher's situation and its limitations so that the next steps are consistent with the demands of the situation. It is also necessary to keep in mind that often teachers cannot state their full concerns and the conditions that surround these fully enough. Several conversations and several assignments for preliminary data gathering may be needed in order to uncover these. It must be remembered that in determining the steps necessary to study a problem it is as important to diagnose the blocks in teachers' attitudes toward the difficulty, as it is to diagnose the causes of the difficulty.

To avoid researching on insignificant problems, or devising extemporaneous solutions to problems which require thoughtful solutions, problem analysis needs to proceed in an atmosphere which provides for several conditions:

1. It is necessary to provide a climate which facilitates an analysis of the factors which those who propose a "problem" may not be quite ready to see.

2. It is necessary to proceed so as to maintain an optimum identification with the problem. It is easy to "detach" a teacher from his concern by suggesting a greater complexity or a greater change in approach than the teacher can take for the time being. This means

that the levels of analysis or of investigation need to be gauged to each individual's ability and insight, so as to maintain his self-respect, while challenging some assumptions and cherished concepts.

3. This in turn means that the steps in the analysis need to be broken down to provide an "easy road in." One needs to gauge the speed with which to proceed with each individual.

The examples that follow illustrate the procedure in the problem identification conferences conducted with individuals in a group setting.

Examples of Conferences on Problem Identification and Analysis

The excerpts below are from conferences with a group of teachers who were just starting in on their "research projects."

Case No. 1. A group of teachers in a Contra Costa County School participating in a pilot study of revising the social studies curriculum.[8]

Mr. C.'s preliminary statement was as follows: "I am trying to keep a class together. I am allergic to disorder. There are 36 in the class and they are not doing too much work. How could I get them all to work?"

This statement suggests several possible causes which the consultant needs to check by questioning. What are the general factors that may generate disorder in the class? It might be that the physical conditions are not right, so the teacher is asked to describe the conditions under which his class works. Secondly, if reading is the main way of studying, and the reading is too difficult, disorder and lack of attention may be the consequence. It is therefore necessary to check what the reading scores are and what type materials are used. Thirdly, the subject matter might be organized so that the students cannot "get to it," so to speak. So, description is needed of what is being taught and how the teacher goes about it, in order that he can diagnose the accessibility to learning of this content in that particular organization. (The teacher was teaching about the Western Hemisphere and was skipping and jumping from one point to another. This alone created difficulties in learning and these difficulties in turn created problems in the classroom.) Still another possibility is that the social structure of the classroom is such that coherent work is impossible. In such a case a sociometric study might be in-

[8] From the records of the County Schools, B. O. Wilson, superintendent; Evelyn Jegi, curriculum director; Hilda Taba, consultant.

dicated. Finally, the teacher may be too "allergic" to what he calls "disorder." A more precise description of what he means by disorder is needed.

Thus, a statement of difficulty is subjected, through conversation and questioning, to a preliminary analysis in order to begin to locate the basic causes of difficulty and to determine the size and the nature of the difficulty. As these preliminary conferences were continued, the hypotheses which were postulated were checked, each in turn, eliminating those that did not seem crucial, and leaving those that might require more serious attention in order to arrive at a final definition of the problem. A teacher's check of reading scores and mental ability showed that the pupils' reading range was not excessively wide. But when the teacher looked at this range he decided that many pupils were underachieving. An exploration of the course content revealed that it was disorganized, and would be difficult to master, especially if reading was the sole source. But an attack on this seemed for the time being impossible because the teacher was oversensitive on this score and started defending his current organization. So, the next step for the teacher was to make a sociometric study of his class in order to discover whether the nature of the social structure in this group composition might cause problems of control and discipline. With this insight it might be possible for him to reconsider the needs of his learning situation, and to see his own role in it.

Mrs. R. began by stating that her problem was the grouping of children. At the beginning of the year she was supposed to have three groups, but found that she had no real working groups. The children all seemed to be individuals. It was difficult to get a group reaction to anything. Also, a large number of children had emotional disturbances: four bedwetters; seven from broken homes; one badly disturbed child who went to church every night, day dreamed, worried over brother's behavior and money; one with rheumatic fever; and one with St. Vitus's dance.

This problem seemed better focused than the preceding one, largely because the teacher used more descriptive and less judgmental language in describing it. Nevertheless, it seemed necessary to get a fuller analysis of the class and of the methods the teacher used in handling it, before the real problem could be uncovered. Since the teacher seemed secure, did not reject her children, and was openly eager to be factually accurate, it seemed possible to start her on studies which would yield an accurate description of the classroom situation and the children.

Case No. 2. A conference with a group of teachers in a workshop of a local school district which is operated on the plan of action research projects in small groups of individuals with similar problems.[9] This workshop was composed of the entire teaching staff (80) of the district led by the local curriculum coordinator with the help of the county curriculum director. A research consultant helped with the initial problem analysis, with the shaping of the research projects, and with research techniques. A steering committee planned and conducted the meetings of the entire workshop, which were scheduled about five times a year. For the rest of the time the teachers worked either individually or with small groups under the guidance of the local curriculum staff.[10]

The excerpts which follow are from the record of the first session with a group of teachers who were just starting on problem identification. The procedure was for each teacher to identify his concern, and for the consultant to ask enough questions to: diagnose what the real problem might be; learn enough about the teacher to decide on an appropriate method of approach; help the teacher establish some connection between the stated concern and the suggested next step.

MRS. P.: "What kinds of seatwork are most profitable in the first grade?" (This question assumes that seatwork is both necessary and inevitable. Since it is not clear what the teaching method is that requires seatwork, it is necessary to get some description of this teacher's classroom methods without seeming to avoid her concern.)

CONSULTANT: Does seatwork mean the type of work that children carry on without any teacher guidance?

MRS. P.: Yes.

CONSULTANT: Why do you use seatwork?

MRS. P.: To give some attention to my reading group. I need it every day.

CONSULTANT: What kind of seatwork are your children doing now?

MRS. P.: Children sometimes draw, such as pictures of Skip, Run, Play. Sometimes paper is divided into four squares and children follow some simple directions and draw and color in each square. They draw other pictures following simple directions. Sometimes,

[9] These excerpts are from the record of conferences held in Washington School District, West Sacramento, Yolo County, California; J. A. Misfeldt, superintendent; Erline Culver, consultant; Elizabeth Noel, curriculum consultant.

[10] For a fuller description of this workshop and of the action-research procedures used, see:

Washington School District, In-Service Workshop, West Sacramento, California, 1956.

they practice their numbers by writing one to 30 in half-inch squares. This is not always good because they don't do it correctly. After children finish their assigned seatwork, they can choose what they want to do. They may choose puzzles, games, books, and painting. Two children get to paint at the easel each day.

For further description of the context in which children do seatwork and its relationship to reading, the consultant asked Mrs. P. to describe how she goes about teaching a story and using seatwork. Mrs. P. said that after children read the story, they are asked to draw pictures. Sometimes these pictures are about the story, but often not; they may draw Jane playing with a ball, but more often they paint just anything: houses, horses, or shooting snakes.

(One difficulty about this kind of seatwork may be that it lacks continuity and relationship with ongoing tasks. This would shorten the attention span. In the light of this the length of time spent on seatwork becomes important as children could be kept busy under these conditions for a short while only.)

CONSULTANT: How long a period do you have for seatwork?

MRS. P.: One hour and a half. This time is broken by recess.

CONSULTANT: It would probably be hard for one group to do the same kind of thing this long even with recess. It is hard for first graders to do anything for an hour. So, we need to look for things they can do that would get them out of their seats, yet not interrupt the rest of the class; secondly, we need to see what kind of training is needed to do these things. We need to devise activities which permit children to move about yet do not require too many controls —and will not make discipline problems. Seatwork needs to be alternated with something else.

(These remarks are designed to prepare the teacher for the fact that problems of seatwork are not to be solved by a simple "gimmick." The normal attention span for first graders and a proper rhythm of activity and inactivity need to be considered. No questions are yet raised concerning the validity of independent seatwork, because there is no assurance that the teacher is willing to consider such a problem, but a preparation for raising this question is now made.)

At the end of this conference several things were suggested for Mrs. P. as next steps in order that further diagnosis might be possible, and in order that she might be in a position to consider alternatives to the kind of seatwork she required.

1. Describe the kinds of things children now do by themselves. Select four or five children—not all.

2. See what things they might do if you prepared them for it, or if you changed their motivation; for example, suggest activities about which they are curious. Think about how you can increase their capacity to stay with an activity by increasing their interest in doing it. Observe the children and try to jot down how long these pupils stay at coloring or painting and why they stopped.

The consultant suggested that there are probably a few individuals for whom time will be too long or too short. The teacher will need to identify these pupils and to find out what happens to them, so that the length of seatwork can be varied according to individual differences. The consultant also asked the teacher to bring these notes, if possible, for the next conference.

This assignment was made so as to secure further data in order to get at some possible causes of the problems connected with the seatwork. The consultant in making these suggestions had several hypotheses in mind: Seatwork causes difficulties because (a) the time for independent work is too long, (b) the tasks do not have enough meaning to hold attention, (c) the teacher resorts to seatwork too indiscriminately and frequently, (d) children are not well enough prepared to carry it on. The suggestions for the next steps were made in the light of these hypotheses. These hypotheses were not stated at the time, first because it would be a better learning for the teacher to discover these factors from her own research rather than from the consultant, and second, because at that point much theorizing is apt to stop teachers altogether, especially if they feel pressure for action and for answers.

The assignment for securing preliminary data included an experiment with an observational log so that, in case the teacher used inappropriate methods, her own log might reveal that fact to her and cause her to reconsider her approach to teaching. Thus preliminary fact finding was designed to open up possible new problems and a new approach for the teacher.

Case No. 3. Problems change in the process of analysis.

This preliminary identification has several effects: (a) The factors that play on the problems are more clearly identified. (b) Possible causes of difficulty are seen more clearly. (c) Questionable assumptions are eliminated. These processes often change the problem. What seemed like a reading difficulty may turn out to be a difficulty in teaching method. What seemed to be a discipline problem may turn out to be a curriculum problem, and so on. Some problems—too vaguely and generally conceived—are narrowed to a specific focus. Others,

which seem too narrowly conceived are put in perspective and become enlarged.

This was the case with a teacher whom the supervisor characterized as follows: "She tells me she does not know enough to talk to persons as smart as the consultant. This is not assumed humility; she is an honest and straightforward person. She is marvelous with disturbed children. She has a messy classroom that drives her supervisor mad, but this is where we put all the stutterers and bedwetters. She needs to be helped to raise the level of achievement of capable, undisturbed children."

When the consultant first saw the teacher and asked what problem she wanted to work on, she said she had a group of bright, but slow-moving children in her classroom. The quality of work was good, but the children were not covering much material. The children were not dreamers, just slow, fastidious workers. When asked for an example, she described how she was afraid to start building an adobe mission, a common activity in the fourth grade in California schools, because children spent practically a whole day building one perfect brick, and then cleaning it of ants that had gotten into it. The teacher was unable to assign any cause for this slowness, except that "they are just built like this." Further questioning brought out the fact that "word reading" had developed in the second grade, and that the class had had several different teachers in the second grade.

This type of complaint seemed odd. Usually teachers blame children or their previous teachers for nonachievement. Yet it seemed improbable that the entire class was "just built" meticulous and slow. Obviously something was wrong with their work habits or with the way the classroom was organized. The teacher needed to see precisely how they worked. Because of the supervisor's description of the teacher's ideas of herself as "not smart enough to talk with the consultant," it seemed unwise at the time to probe directly into her teaching methods. A time and motion study seemed an appropriate type of check on the work habits. The supervisor agreed to be the observer, recording the activities of two pupils. The teacher did not believe her results, so the supervisor took the class while the teacher recorded the activities of the same two students. The results were very similar.

Here are sections from the teacher's record of one student's activities during arithmetic seatwork:[11]

[11] From the records of Contra Costa County Schools, Mary Durkin, supervisor.

George L.—Time and Motion Observation—Arithmetic

11:32 Stacked paper
Picked up pencil
Wrote name
Moved paper closer
Continued with heading
Rubbed nose
Read problem—lips moving
Looked at Art's paper
Started to work. . . .

11:45 Worked and watched
Made funny faces
Giggled. Looked at Lorrie and smiled
Borrowed Art's paper
Erased
Stacked paper
Read
Slid paper around
Worked briefly
Picked up paper and read
Thumb in mouth, watched Miss D. . . .

11:48 Worked and watched
Made funny face
Giggled. Looked and smiled at Lorrie
Paper up—read
Picked eye
Studied bulletin board
Paper down—read again
Fidgeted with paper
Played with pencil and fingers
Watched me
Watched Lorrie
Laughed at her
Erased
Hand up
Made faces at girls
Laughed. Watched D.
Got help

11:50 Looked at Lorrie
Tapped fingers on desk
Wrote
Slid down in desk
Hand to head, listened to D. helping Lorrie
Blew breath out hard
Fidgeted with paper

Looked at other group
Held chin
Watched Charles
Read—hands holding head
Erased
Watched other group, chin on hand
Made faces—yawned—fidgeted
Held head
Read, pointing to words
Wrote
Put head on arm on desk
Held chin
Read
Rubbed eye
11:55 Wrote.

This record demonstrated that the problem was not that George was over-meticulous, but that he was wasting time on a variety of unnecessary activities. This seemed just a casual habit, not anything connected with emotional problems, resentment of the teacher or of the assignment. The "cure" seemed fairly simple after the essential difficulty was located. The teacher agreed to read the results to the class, then to suggest that the children choose a couple of pointless activities which they would try to eliminate every few days. The teacher at the same time agreed to reduce gradually the time allotment for the assignments. This method would exert a double pressure on changing work habits: change in time and a self-assumed motivation.

This analysis had made the teacher curious about the methods of motivating the children. Consequently, she proceeded to investigate what these children expected of themselves and of the others to provide clues for examining their entire achievement pattern, including their work habits.

To this end it was suggested that the teacher ask children to write on several different days what they like about themselves, what other people like about them, and what makes them mad and what they do about it.[12] It was hoped that these papers might help the teacher avoid going against the grain when changing classroom procedure.

At the next conference, a couple of months later, these papers were examined. After reading over the papers together a scheme of classifying the responses was developed in order to get a focused

[12] For these and other diagnostic techniques see Hilda Taba, Elizabeth Hall Brady, John T. Robinson and William E. Vickers, *Diagnosing Human Relations Needs,* Washington, D. C.: American Council on Education, 1951.

picture of the entire class. This tabulation yielded many surprises, among them the fact that these children thought they were good in their school subjects and thought of themselves as "good, tidy, with proper habits and good appearance." While these data in part revealed the clue to the treatment of work habits, they also set the teacher to work on these children's values and self-expectations, which seemed to her to be entirely too limited.

The problem identification and analysis in this case took some time, because initially the teacher identified a cause that was not central to the problem that was eventually revealed. Since no one else was in a position to diagnose what precisely went on in her classroom, the teacher needed to explore several possibilities until a more satisfactory diagnosis of the problem emerged. The teacher needed suggestions regarding what data to gather. She also needed training in how to handle and interpret these data in order to get appropriate meaning from them. In point of time this effort may be considered wasteful. Yet, when one considers the fact that systematic methods of diagnosis made this intuitive teacher more perceptive and that the methodology and ideas about diagnosing in this situation may be useful to a great many other teachers with similar problems, the time seemed well spent.

A Sequence in Problem Identification

Action projects cannot develop effectively unless work on them follows a sequence which proceeds both by logical research steps and by a learning sequence for those who participate in it. For example, teachers cannot project curriculum units before learning to diagnose the needs of their students. Yet analysis of needs often requires reorientation of the conceptions and attitudes regarding what is important in learning and teaching. These in turn necessitate a careful breakdown, since burdening participants with too large a task of learning new skills, plus a new orientation, might prevent change altogether.

Roughly, the steps in the complete sequence of developing action projects based on research are as follows:[18]

The first step is to identify the problem as the staff sees it, with the object of discovering what concerns, interests and problems exist. At this step a diagnosis of the difficulties surrounding these concerns

[18] Condensed from Hilda Taba, Elizabeth Hall Brady and John F. Robinson, *Intergroup Education in Public Schools*, Washington, D. C.: American Council on Education, 1952. p. 278-93.

usually takes place, such as identification of faulty assumptions and attitudes, limitations in the school situations, and the level of skill and the quality of the orientation of the teaching staff. Often, also, tentative analysis of the causes of difficulties and concerns is possible. Of course, it needs to be recognized that preliminary exploration might lead to other more significant problems. Each successive step may modify the ideas about the nature of the problems stated, reveal new dimensions, and open up new directions for the development of the project.

The second step—the problem analysis—usually consists of some preliminary investigations to get at the more basic factors and causes and to correct misinterpretations or limitations in the initial view of the problem. The gaps seen in the initial problem statements determine the nature of these investigations. These investigations need to be quite simple because at this point identification with the problem is as yet weak, and the impatience for answers too great to make welcome the prospect of pursuing prolonged studies. If these studies are carefully designed, they should at the same time orient the workers, enlarge their insights, redefine the problems and focus these more clearly.

A re-analysis of the problems in the light of the findings from the exploratory studies usually follows. Often a completely new view of the problem emerges: a new set of questions, a new idea about the causes and a new set of hypotheses concerning what the crux of the matter is.

After this, it is possible to study the problems more systematically and thoroughly—to pursue the research proper. These studies are more prolonged and need to be made with a great deal of attention to scientific procedures, to precision of tools employed and to proper insights in interpreting the results. This step therefore also necessitates the training of the participants in the use of research tools and methods.

The fourth step is that of projecting action plans—developing curriculum units, making plans for student activities or trying out new methods of teaching, regrouping of students or whatever area of action is indicated in the problem. Training in new professional skills becomes important at this stage, as teachers need to learn to implement their new ideas with proper techniques and teaching procedures, such as learning to conduct open discussions, to reorganize subject matter or to handle group processes.

The final step is that of testing out the consolidated plans in action and assessing their effectiveness. This usually means a careful plan-

ning of the action steps as well as evaluating pupil progress by a more or less systematic use of such evaluation devices as are appropriate—securing records of performance, testing achievement and observing a variety of behaviors for growth and change.

The following example illustrates the first two of these steps in a situation in which the preliminary exploration was quite prolonged, because the "problem" was complex, and the views regarding the problem were conflicting and the issues surrounded by strong feelings.

Identification of the Concerns

The first meeting. After this segregated school system had been invited to participate in the exploratory national program in intergroup relations, this particular Negro high school expressed interest in joining the study. The first step was to visit with the principal, to explore what the school might want to do, and which staff members might participate. The principal indicated that the school was much concerned with inadequacies in social behavior, such as conduct in streetcars. His view of work in intergroup relations was that any work was impossible unless it started with contact with white students. He seemed loath to consider anything about the needs of his students, because this suggested to him that Negro students were different because they had unique needs. The consultant realized at this point that in addition to the need to locate a problem to work on, a major change in attitude toward intergroup education was also needed before serious work could be done in this school.

The second meeting. Next, a meeting was held with seven teachers whom the principal had chosen because they were interested in the problem area. These teachers represented the fields of English, social studies, homemaking, music and science. A problem census in this group revealed concerns and assumptions similar to those of the principal. They wanted to develop racially mixed groups for discussion and contact, to know how to promote a better use of community facilities, how to improve social behavior and how to study socioeconomic cliques in the school. Group members thought, however, that their view might not be representative, and agreed to conduct a survey of what was taught about group relations in the entire school. A token step toward contact with white students was planned—a small mixed panel that might appear in a few high schools in which there were teachers participating in a similar program. Because an interracial panel was quite revolutionary, it was necessary to treat this little experiment as a completely controlled

precedent in crossing the race barrier, crossing of which was presumably against the law. Hence, the following criteria were laid out for this program: (a) it was not to touch on race questions, (b) it should deal with a very respectable subject, (c) the Negro students should be trained in content as well as in conduct *vis-à-vis* white students, (d) the whole project should be sponsored by a city-wide advisory group.

The third meeting. Reports of the survey revealed an emphasis on racial problems in social studies—such as investigations of discrimination, of anti-discrimination laws, job opportunities for Negroes, etc. A panel on "Effects of the Atom Bomb" was being planned. This included representatives from three white high schools and was to appear in two white and one Negro high schools. In addition, the home economics teacher was planning to invite some white students to her fashion show. These steps were taken largely in order to meet the demand for contact. Meanwhile there was further exploration of the possibility for some more indigenous program within the school, since a curriculum based on unique needs was not congenial to the staff. Yet without this orientation, no adequate curriculum development was possible.

The fourth meeting. The consultant hoped that a development in literature, such as free reactions to books, would open up the possibility of seeing that these students had problems and needs worth working on. Therefore, a session was planned with the teachers of English, including observation in classrooms by the consultant to help identify the possibilities. With the exception of two teachers, all those observed used methods that allowed only the "text" literature and only the traditional method of discussing books. Some reaction stories (short stories on human relations) were forwarded to these two teachers, with suggestions of how to develop free discussion on realistic problems of Negro adolescents. These discussions developed a chain reaction. The two teachers identified many problems these students faced. They also undertook to train these students to face these problems more realistically. One example was the use of sociodrama on facing rebuff in seeking employment; this was later used as a commencement program. This action created a new sensitivity regarding needs in the staff, and a new receptivity toward studying these needs and developing a program to meet them. This was aided by the city-wide meeting on general education in which a decision was made to reconsider the ninth grade general education program. This decision, supported by the changed attitudes, provided the

first real opening for beginning the exploration of the human relations needs.

Problem Analysis

The fifth meeting. Since the general education to be studied was in the ninth grade, the principal selected a new group of teachers to explore the possibility of introducing a human relations emphasis in this program. The first effort of the new group was to explore the literature on general education—such as the Harvard Report on general education. This group also decided to compose a questionnaire on student concerns and interests, thus for the first time accepting the approach of studying the needs in their own school. This decision not only reflected a reversal of the staff attitude toward studying student needs. It also broke the city's tradition of beginning work on curriculum with a unit production committee by initiating curriculum work with research. This decision was greatly aided by what had happened in the use of fiction on adolescent problems—the records of these discussions had revealed many serious problems resulting from a segregated pattern of life. The literature teachers had also discovered that race problems are tied in with many other more universal problems and conflicts in human relations, such as those between parents and children, boys and girls, the authorities and those subjected to authority, etc. It was now possible to use a wider concept of human relations for a starting point. Consequently, a small group of teachers began working on developing a battery of devices diagnosing human relations needs.

The sixth meeting. Only five teachers had begun drafting a battery of devices for diagnosing the home backgrounds and concerns of students. But since the entire ninth grade was to be involved in the curriculum revision, arrangements had been made for all teachers engaged in the ninth grade program to participate in this meeting. Plans were made for administering such a battery to all entering ninth grade students. This battery, developed with the aid of consultants, consisted of the following:

1. A series of topics for free writing, such as "What I would like to change about my home," "What I like about myself," "What other people like about me," to acquaint the teachers with their students' home life and with the children's ideals and values.

2. A series of diaries, to provide information about life patterns and activities outside of school.

3. A study of student participation in community centers and of the programs in these centers.

4. A study of participation in school activities, to discover how far ninth graders were involved in them and to what extent they gave opportunities for leadership training and for feelings of belonging and prestige.

5. A sociometric study of interpersonal relations in the classroom. Schedules, methods of administration, and arrangements regarding the responsibility of each teacher were worked out.

The seventh meeting. The questionnaires had been constructed and revised, and this session was devoted to blocking out directions for administering the themes, diaries and sociometric tests so that each teacher felt at home in using these instruments. Essentially this was a training session. But it was also the first revelation of the entire scope of the needed study.

The eighth meeting. The vision of the scope of the study had overwhelmed the staff, particularly since an assumption had been made that some one person or school staff had to summarize everything. Since no one felt competent to do that, nor could anyone spend the needed time, it was necessary to spend considerable time working out a cooperative scheme for tabulating and interpreting these data according to which (a) each teacher summarized data on his own class, (b) training sessions were provided to help with the needed skills, (c) the consultants assumed responsibility for those aspects of interpretation and tabulation which were too intricate or time consuming. A meeting was therefore held to allocate work, to develop a method of tabulation and categories for summary.

The ninth meeting. After the tentative summaries were studied by the school staff and the consultants separately, a two-day meeting was arranged to develop interpretation of all data and to work out action hypotheses (e.g., hypotheses re curriculum emphasis) that these data suggested. This meeting served to correct many assumptions about the students and their home backgrounds. It also yielded a rather concrete list of needs and gaps which helped to focus curriculum planning.[14]

The entire process had consumed about 15 days of meetings, spread over two years. It accomplished (a) an orientation to the research approach in curriculum development, (b) a change of attitude and definition regarding crucial human relations problems in a segregated community, (c) an involvement of the entire teaching staff in the research process, and (d) a compilation of data needed for curriculum development.

[14] For other sequences, see Hilda Taba, *et al.*, *Elementary Curriculum in Intergroup Education*, Chapter 5; and *Curriculum in Intergroup Education, Secondary Level*, Chapter 3; Washington, D. C.: American Council on Education, 1950 and 1949; Hilda Taba and Elizabeth Noel, *op. cit.*

Roles of the Team Members

As can be seen from the above, the main tasks in this process are four: (a) to diagnose the teachers' states of mind and feelings, (b) to develop the problems to a point at which the hypotheses regarding their essential natures and causes begin to emerge, (c) to devise techniques of analysis or of data gathering which are calculated to develop the several possible hypotheses concerning the nature of the problem, and which at the same time promise to change the respective teachers' minds and feelings, and (d) to train the respective practitioners in the methods of gathering and interpreting preliminary data. In effect, training and dealing with the problems are combined.[15]

These tasks require several competencies. First, someone needs to see the relationship of these problems to the local curriculum and to the limitations of the working situation, so as to help prevent investigations from assuming directions which cannot be put into practice. Of course, it is equally necessary to discourage side-stepping of problems because of imaginary difficulties.

Further, unless someone is capable of postulating all the major areas of causation related to the difficulties described in problem identification, and then can exercise selective judgment regarding which are most likely to be operative, the preliminary explorations may easily degenerate into fruitless and prolonged fishing expeditions. It is necessary to eliminate the least likely possibilities by examining the situations described, and to use the preliminary data to select the most likely possibilities.

It is important also to decide what a given person can do, or what blocks he needs to overcome: what threats and fears he feels, what his skills, orientation and perception levels are and whether based on his competence or his personality. Some individuals are capable of great objectivity from the start, while in others this characteristic may develop slowly. Some may be able to take on a considerable amount of work, while others may be easily discouraged by complexities.

Because the participants themselves are not always capable or willing to perceive these obstacles, especially at the starting point, it is up to the research consultant to diagnose them, to incorporate into problem identification and analysis training devices which at once take these difficulties into account, and to include experiences designed to help teachers to eliminate them.[16]

[15] See Harry A. Passow, Matthew B. Miles, Stephen Corey and Dale C. Draper, *Training Curriculum Leaders for Cooperative Research*, New York: Bureau of Publications, Teachers College, Columbia University, 1955, p. 11.

[16] See Harry A. Passow, *et al.*, *ibid.*, p. 115-20.

Still another required competence is sufficient familiarity with research techniques so that each of the manifold problems can be matched with an appropriate data-finding technique. It would be fatal to turn the table around and to match the problems to a preconceived study technique. Accommodating the selection of problems to study or the dimensions of problems examined to the existing techniques, or, worse yet, to those existing techniques with which an individual researcher happens to be familiar would be fatal to creative development. This would lead to the impoverishment of research and curriculum development referred to in the beginning of this chapter.

In a sense, the research technician needs to assume the role of an intermediary—between the teachers and their problems on the one hand, and on the other, the vast areas of ideas and techniques that might help. This includes adaptation of techniques and devices from many areas other than education, as well as diagnosing new techniques to meet the unique demands of certain problems. A cooperative analysis of the specific hypotheses to test and a cooperative pooling of insights by the entire team are necessary to produce techniques which are both scientifically valid and appropriate to the given situation.

And, finally, experts are needed on situations in which the problems are rooted. Teachers need to be recognized as experts concerning the situation in which the problem is set. No one but they can know exactly what the circumstances of the classroom are. No one except the teachers can describe what is really happening in the classroom. No one else is in a better position to get data from the children. It is best for the teachers to understand their role from the start: that no one else but they themselves can solve the problems; that no answers appropriate in other situations will serve them fully, because no classroom situation is precisely like theirs. Since it is rare to find such a series of competencies in one person, a need for teamwork is usually indicated. This array of competencies can usually be found only in a team that combines curriculum consultants, research technicians and teachers. However, it is more important to consider representation of competencies rather than of positions, except as representing positions on such study teams may be important in building up leadership in curriculum development, and in assuring proper implementation of the findings of action research. If the school systems are short of the kind of research technicians who are well versed in a variety of research procedures and competent in guiding the process of problem analysis, the using of an outside consultant with these qualities may be indicated.

The role of the research consultant also differs at different steps of the research process. In the beginning of the identification of problems, the consultant role is mainly that of a diagnostician; he is the patient listener and questioner. Probably his most essential quality at this point is permissiveness and the ability to induce analysis and distinction without appearing critical. As a diagnostician, he also carries another responsibility. He needs to be aware of the possible factors in the problem and to guide the analysis or study in such a fashion that the workers through their own efforts become aware of these factors. Thus, while the initial diagnosis is made by the consultant, it is important that the consultant focus whatever perspective he has on the problem as seen by the working group and not substitute another problem.[17]

The guiding process needs to be selective in a sense of guiding the group toward a more rational perspective on the problems, and toward a richer and a more promising focus. Yet, it would be fatal if this guiding process assumed the tone of manipulating the problem away from genuine teacher concerns. The consultant also needs to size up the teachers in order to direct their efforts toward self-discovery and retraining by steps which are psychologically appropriate, and which free the teachers instead of cultivating dependencies.

During the problem analysis the consultant's role changes to that of trainer—explaining methods of study, describing ways of using a technique or suggesting criteria and procedures by which to study the meaning of data objectively. These are active roles. As the competence of the group grows and the members' grasp of the problems, ideas and techniques increases, the consultant role recedes, giving way to more independent thought and action by the group.

In all, however, the consultant is more effective if he is a learner himself, not one with frozen ideas about curriculum or about how problems are to be studied.

Problem analysis is likely to be the slowest step in the entire procedure while at the same time one which provides the greatest temptation to hurry, both on the part of teachers and on the part of those helping them, because it is the most frustrating one. For these reasons the change techniques tend to be of two varieties: putting the burr under the saddle, or simply waiting. Action research is somewhere in between these two extremes. It avoids the burr, and creates step-by-step the stimulation for change in the teacher. In guiding, one

[17] For illustration see *Identifying and Helping the Slow Learner*, Curriculum Bulletin No. 2; and *Helping Retarded Readers*, Curriculum Bulletin No. 1, West Sacramento, California: Washington School District, February 1, 1956.

needs to exercise patience in letting these steps do their own work, and waiting while this work goes on. The teacher needs to find his own burr, and each person does this at his or her own rate. Usually pushed projects explode somewhere, and cannot be brought to their legitimate conclusion.

A word is needed about the dynamics of teamwork. Teamwork in such an undertaking needs to recognize supplementary competencies. Each individual needs to recognize the other, to yield to unique expertness, to recognize personal predilections and foibles, and to allow for a creative reconstitution of each person's contribution. Teachers have expertness, which needs to be given a full role, and not be pushed aside or submerged for a superior one of the so-called researcher. A research technician has skills, which, if exercised with judicious recognition of the cooperative enterprise, can be used to lift the level of insight on both sides. Cooperation is not merely working together—it needs to be a true meshing of ideas, approaches, insights and skills. Creativity depends on this meshing—and inventiveness is one much needed quality in this process.

Chapter Four

Achieving Focus

JOHN T. ROBINSON

CURRICULUM RESEARCH, as pointed out in the previous chapter, is a cooperative enterprise involving many people and several different kinds of insights and competencies. Such research involves teachers who work directly with children, curriculum consultants and, on occasion, consultants in research procedures. In addition, specialists in particular content fields are needed from time to time, to indicate concepts and ideas useful in defining curriculum problems and in interpreting results. For instance, insights into American subcultures may be necessary to interpret adequately the kinds of problems which particular children face; concepts developed in sociology and anthropology become important in making these interpretations.

We hope that social scientists from many fields will, over a period of time, work closely enough together to make possible the dissemination of useful concepts to educational workers. At the present time, however, these relevant concepts and ideas must be gathered by curriculum makers themselves; also, at appropriate times, consultation with persons having specialized information may be asked.

A temptation to stereotype the roles of persons and, thereby, to limit the contributions they can make is always present and needs to be guarded against. For instance, a kindergarten teacher with wide experience in designing studies of children and with considerable knowledge of social learning may not be effectively used in a new group because others in the group assume that only the curriculum expert understands these matters. Therefore, it cannot be said too often that each new working group must learn what skills and insights exist in which of its members without regard to each member's particular status and role.

Why Focusing Is Needed

In developing focus for curriculum research, several difficulties present themselves. First, the problem is likely to be defined too narrowly, especially if the problem engages the attention of only one person. Teachers are prone to focus on an immediate problem and to attempt its solution at once. Often, too, a research person or a curriculum consultant sees a problem that fits his concern without proper attention to the day-to-day classroom problems which harass those who work directly with children.

Frequently, when the problem statement is narrow, those involved assume a way of dealing with the problem at the outset. Thus exploration of the problem from various angles and different points of view is minimized.

Too narrow definition of the problem often accompanies settling on the problem for investigation too quickly. Anxious to get results, the researcher's first definition of a problem may be accepted without careful analysis and, thereby, unnecessarily limit the scope of the research and the usefulness of the findings.

The opposite danger is also present, namely subjecting the problem to such rigorous discussion and analysis that people concerned with curriculum change become exhausted and bored. Pressed by the need for action to allay the practical day-to-day problems, teachers and others withdraw from participation. The seeming impracticality of the discussions force many teachers to make stopgap solutions for themselves and to accuse consultants of being too theoretical and too far removed from the actual happenings in the classroom. Indeed such accusation has considerable justification when the problem analysis is forced out of its setting and becomes an abstract problem for consideration.

It is important, then, to design curriculum research in such a way that some steppingstones to action are present for immediate satisfactions without, at the same time, freezing the problem for consideration in such a way that the results are too limited.

Another danger is that of including for research too many dimensions of the problem. This makes setting up a design so tedious and time-consuming that practitioners in education lose interest and abandon the research or withdraw from it. When such a problem is selected the data gathering becomes huge and unmanageable, creating both frustration and confusion.

Studying the backgrounds of children as a backdrop for curriculum change is a case in point. Assembling all the data on children's back-

grounds becomes a never-ending task. Which aspects of children's backgrounds are relevant to particular curriculum problems needs to be decided, and data gathering begun on the most crucial points first.

To be sure, such an approach raises new questions which need investigation, but the process then becomes selective, providing guideposts for a road to travel rather than moving toward an undecided destination.

All people involved in curriculum research have certain biases. These need to be recognized and understood for what they are or they may become blocks to the research group's efforts. Two major preconceptions operate to narrow research and to prevent real change in the curriculum.

First, biases for particular methods and techniques sometimes prevent exploration and creation of new techniques related to a particular problem. Techniques which are known and readily available sometimes control the kinds of problems which are selected for study. The result is that problems are selected which are narrow in scope and, often, of little importance. The more complex curriculum problems are passed over again and again when this approach is followed.

This danger is understandable because of the preoccupation some of us have, that educational research must be scientific. Perhaps the thorough rethinking of scientific method in education, now in progress, needs acceleration.[1]

Second, established frameworks for curriculum content carry the connotation of particular subject matter and methods. For instance, home and family living, included in almost all state frameworks in the first grade, seems to suggest to many teachers of children how children should behave and how they should "help at home," often with an overlay of what "good" family life is. Moreover, certain activities have come to be associated with this subject matter—a play corner, dramatic play, and the like.

No less restrictive are the frameworks for high school teaching. A course in American literature seems to imply emphasis on particular literary forms and often even the prescription of particular literary works. Innovations in method, unrelated to a reconsideration of content, lead simply to recoating the same old pill.

The net result of a predisposition to think about new problems in the same context leads all too often simply to repeating previous actions but giving new rationalizations for them.

[1] For elaboration of this point, see Hilda Taba, *Dynamics of Education*, New York: Harcourt, Brace and Co., 1931, Ch. I.

Planning a research design in curriculum should take into account the biases people have and should provide steps which open up new action possibilities and new ways of thinking about both content and method.

Expanding Focus

Problems for practical curriculum research usually center around the trouble spots that occur in working directly with children. The first problem statements, therefore, serve as the first focus for the research and as guides for beginning to gather data. When the first problem statements are assumed to be the most important ones for study, however, the design is likely to be too limited.

For instance, in the school in which tardiness was a primary concern of teachers, the teachers wanted to know what they could do to get children to come to school on time. Immediate action to relieve the situation was desired by everyone. But to act without understanding the relationship of tardiness to children's expectations, parents' views, and the like could easily lead to inappropriate action rather than to a real solution to the problem. Any one problem is related to others when curriculum is understood as all the experiences which children have under the auspices of the school. Therefore, these relationships need to be explored carefully before the focus of the research is finally determined. Such explorations inevitably lead to an expansion of the original considerations and to suggestions of some lines of inquiry.

Exploring problems in their total setting leads to stating "hunches" and informed guesses about the possible causes which lie back of the original problems. These hunches become the focal points for gathering data and, together, serve as a preliminary study design.

In one school the upper-grade teachers were concerned with the lack of responsibility of children; many evidences were given: tardiness, especially in returning to school after lunch, failure to take care of jobs in the room such as watering flowers and feeding the fish, forgetting homework and similar problems.

This problem, to be understood, needed to be studied with reference to the setting in which the behavior occurred. Several lines of inquiry were suggested: (a) observation and recording which children did or did not assume responsibilities; (b) diaries of children's out-of-school activities; (c) sociometric questions based on friendship and work choices, with interview on the reasons for choice. These lines

of inquiry were based on two hunches—that the responsibilities important to the teacher might not be important to children and that those children feeling acceptance and belonging might be more inclined to feel responsible for the classroom than those who were left out or on the fringe of children's groups.

When these exploratory bits of data were gathered, the teachers and consultant met to share information and to discuss the problem further.

The observation and the sociometric data did not support the hypothesis that the chosen children were more responsible than unchosen ones. Children enjoying all kinds of choice positions were among those who seemed irresponsible. The information from the diaries gave everyone concerned quite a jolt. The teacher said, "I want to read some of the diaries to you before we try to categorize them." She read several selected ones. The most telling was written by a fifth grade girl.

On Saturday, the girl wrote, she prepared breakfast, shopped, cleaned the house, did the ironing, prepared lunch for her little brother and sister, and prepared dinner. On Sunday, she prepared breakfast, dressed her little brother and sister, went to Sunday School with them, prepared dinner, washed the dishes, and "then I sat down and took myself a rest." The teacher added, "And certainly that child needed a rest."

In this sharing of preliminary data several things happened in addition to expanding the problem. First, the problem which became important to the group emerged, namely, "What responsibilities do our children carry outside of school? What responsibility does the school have toward helping them to understand and face the problem they meet? What changes in the school curriculum should be made to provide some of the childhood experiences these children are missing?" This problem became the action-research problem for the group.[2]

Second, the gathering and discussion of preliminary data revised the *feelings* participants had about what was important to do and toward the problems which the children faced. The revised feelings about children's lives in school and out gave impetus to the clarification of the problem and to expanding insights into the kinds of data which seemed relevant.

Thus, the focus of the study shifted to an action level. Data gather-

[2] See Arthur W. Foshay, Kenneth D. Wann and associates, *Children's Social Values*, New York: Bureau of Publications, Teachers College, Columbia University, p. 59.

ing proceeded around the special needs of children living under particular circumstances, revision of curriculum on the basis of these findings, and study of the effect of these changes on children's learning.

It seems clear that the focus for curriculum research changes as work proceeds. First-level focus is a single problem, often rooted in some difficulty which people wish to change. Preliminary analysis of this problem and its relationships to other problems suggests some promising lines of inquiry based on hypotheses regarding causes for the problem. When these hypotheses are reconsidered in the light of relevant preliminary data, some are disproved and drop out; those remaining suggest a new focus for the study design centered around some promising lines of action. Thus, the study design emerges, and the focus of the study changes as data are gathered and changes are made.

Sometimes, in curriculum research, data gathering serves the purpose of focusing the problem. Vague notions about what experiences to provide for children may focus on particular problems when some preliminary data are gathered. Framing questions around which data need to be gathered serves, in such cases, as the first step toward problem focus. It is at this point that different skills and insights are particularly important. A first grade teacher's experiences may illustrate this point.

As previously indicated, from coast to coast, first grade units on the home and family are included in the curriculum. Too often these studies focus on the "ideal" family in the hope that children will learn the correct ways for families to live together. Another approach to this study has been teaching children to help at home and to be useful in other ways. These studies all too often do not take into account the family experiences of children or their reactions to them.

In developing a curriculum for a particular group of children, the teacher and the consultant considered several questions, namely: (a) Do these approaches inadvertently teach some children that their parents are not good parents? If this is so, such teaching may play havoc with children's mental health by teaching them the adults upon whom they depend for so much are not adequate. (b) Do these approaches lead toward restrictive thinking about family life in America and, actually build up in children inaccurate concepts of family life with which to interpret their environment? (c) In a suburban, commuting community, what do children need to learn about family life that would not be applicable for children in a rural setting?

Reflecting on these questions, the teacher and consultant believed that children of this age are attempting to organize their environment in some meaningful way which shows their relationship to it; moreover, they hypothesized that some aspects of their family life are unknown to children in urban and suburban settings. Again, turning to the nature of childhood, they agreed that strong relationships with both parents are important in the process of growing up.

These considerations led to a special angle on the curriculum problem. What areas of family life are relatively unknown to children? Do these offer opportunities to strengthen relationships with parents? Only now did the teacher feel data gathering was important. Two kinds of data seemed useful for further planning.

1. The occupations of fathers and the locations of their work.
2. What children knew about the work their fathers did away from home.

The occupations which fathers held were of three kinds—skilled labor, white collar and professional. The places of work covered a 30 mile radius; only one father worked in the local community. Two mothers worked, all others were housewives.

Most of the children knew the names of their fathers' occupations, some knew the places where their fathers worked, though many did not. Few of the children had any accurate information on what their fathers did.

On the basis of this information, the teacher started planning experiences for children. She gathered pictures of men at work at the kinds of jobs their fathers had; children asked their fathers what they did and reported to other children; they conducted dramatic play of what their fathers did. The teacher and children made a simple floor map of the area, placing and labeling each child's home and where his father worked.

Fathers made or secured samples to represent their occupations which were then placed on the map at appropriate places. Several outcomes were noted by the teacher.

First, the high level of interest children showed in the project. Second, the interest parents showed in the project on open house night; evidence was clear that parents had discussed the project with others and a number of parents who did not have children in the room came to see the project. Third, the teacher found that, using concrete experiences to build up concepts and information, children were able to reach generalizations themselves which she had not thought possible.

The focus of this study, vague as it was at the beginning, became

clear as the study and experimentation proceeded. Its focus was primarily to reconstruct content and experiences for children. Later, the focus of the study was expanded to include such questions as: What concepts and generalizations can children reach under a particular set of educational circumstances? What meanings do they derive from these experiences and how long are they retained? These questions led to a follow-up study in which new data and new methods of obtaining it had to be developed.

Thus, expanding the focus of the problem for research involves several steps:

1. Selecting as the first-level problem the difficulty or concern someone (usually the teacher) has, no matter how inconsequential this problem may seem.
2. Starting some "hunches" as to the causes which lie back of the problem.
3. Gathering data relevant to proving or disproving these "hunches."
4. Restating the problem or issues revealed by these data and their interpretations.
5. Considering their restatement in the light of concepts about growth and development, human behavior and society, imperfect though these may be.
6. Proceeding with data gathering and experimentation around this new focus and interpretation.

Extending the Design

Research which begins with a single problem, especially if related to a single classroom group, runs the risk of remaining too limited in scope. In the foregoing examples, illustrations were drawn to show how the original problem took on wider significance as data were secured and interpreted for deciding on next steps. Certain principles are important to follow in extending the research-action design to include wider areas for study, yet maintaining focus for the research.[3]

When research is developed from a single problem, the beginnings are necessarily small. The first data may well be the concern of only one or two persons. Yet when the second level of problem statement is reached and possible lines of action are developed, these may—and usually do—include concerns with which others can identify.

In the example given of the first grade teacher's exploration of what children needed to learn in family life, only when the issue

[3] Ways of organizing groups for work are fully treated by Frazier in Chapter Nine.

became centered on what children need to understand to gain increasing control over their environment did other teachers see that they had concerns in the same area. Thus new explorations were begun by other teachers to determine what their children needed to know about other aspects of their environment—the neighborhood, new buildings, machines and other things.

Moreover, as experimentation with new content and methods followed the initial gathering and interpretation of data, the methods themselves became further explorations by some teachers. For example, the discovery that children's levels of generalization in discussions exceeded what the teacher thought they were able to do became a focus around which one teacher recorded discussions of children using different kinds of content to discover what levels of generalization children were able to reach under these circumstances.

Each person could explore a problem of particular concern to him but which had a bearing on the larger design for the study itself. This factor serves also to illustrate a second principle, namely, that the same problem may be explored from different angles, thus enriching the data and the study as a whole. It is apparent, then, that all of the persons involved in the study need not participate in all aspects of the study design, but rather, may select for research a particular aspect of the study with which they are especially concerned. This necessitates, however, a method of sharing and interpreting information as it is gathered in such a way that each aspect of the study contributes to understanding the whole.

In one elementary school, for example, four teachers at different grade levels made sociometric studies of their classroom groups. They reseated their children sociometrically and kept records of such things as participation in discussions and aggressive behavior toward each other. The teachers found as they shared the information that in each case participation had increased and, while the records were not complete enough on aggressive behavior, they believed that there had been some reduction of this. They reported these findings to the total faculty and the principal raised the question of whether or not the entire faculty would like to try grouping children the following year by using sociometric choice as one criterion for assigning children to rooms. The faculty decided to experiment with this method of grouping in the total school and to keep more complete records of their own classroom practice as well as records of participation and the like. They planned, moreover, to keep case records of academic achievement based on the hypothesis that as children's social needs are more nearly met, the freedom to learn in other areas of the curriculum will

be increased. Thus the faculty, stimulated by a rather narrow study of social relationships among children, embarked on a study of important factors which influence children's learning in school. It is reasonable to expect that as the study proceeds other factors will be investigated as they emerge in the action steps already planned.

In developing the design for curriculum research, provision also needs to be made for studying similar problems under different educational conditions. This means, then, that some people may participate in the research at a later time, restudying some of the problems upon which data and analysis are already available. For example, junior high school teachers of English found that when their reading and studying of literature were around the kinds of problems that children faced as developmental tasks, there was an increase both in the quantity of reading and the quality of writing and discussions. This could, of course, be caused by some other factor than the selection of content. In order to check this possibility, different teachers with different groups of children were asked to try the same change in content to see if they secured similar results.

Curriculum research, then, does not begin and end, but is a continuous process. Each problem opens up new discoveries and recognition of new problems; each problem also is related to other problems on the same level. Therefore, curriculum research involves extending the design to include problems both horizontally and vertically.

Maintaining Central Focus

With several people concerned with a research problem in curriculum and when their concerns and their particular roles with reference to the research differ, the problem of maintaining coordination of people's efforts becomes an increasingly important one. It is easy to have everyone riding off in different directions unless certain roles are carried by various members of the group. These roles need not be fixed in the sense that teachers do certain things, consultants do other things; rather, these roles need to be inspected on the basis of the tasks involved. It is important, therefore, from the beginning that the analysis of the problem, the selection of needed data and the gathering and interpretation of these data need to be discussed by all the persons involved in the research at any one time. This leads, of course, to a consideration of what skills and knowledges are needed to carry through the research project and to a determination of who can do best which aspects of the research. A constant danger is that of assuming that only curriculum experts have had experience with research tech-

niques and, therefore, that the responsibility for the design rests primarily in their hands. When this occurs, the growth of all persons involved, including the curriculum expert, is obstructed.

An inspection of what needs to be done and the skills and knowledges needed often reveals that some crucial competency is missing in the study group. It is at this point that special skills may be needed from outside the group, but skills that are focused on the concerns the group has. The continuing explorations of what skills various people now have or are learning lead to continual growth of all participants. By this means new learning takes place, and this important by-product of curriculum research needs to be protected. The changes which occur in the people involved in the research cannot be minimized when inspected in the light of the actual effect of the research in changing the curriculum.

Chapter Five

Handling Data

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THIS CHAPTER is concerned with the handling of data that are collected for the purpose of improving the curriculum. As such, the chapter cannot (or should not) be divorced from considerations of the purpose of curriculum research or of large problems of methodology, such as the problem of validity, that are discussed from other points of view elsewhere in this volume. The handling of data must be considered in a context that includes both the purpose of the research and the conception of the research process. Consequently, we wish first to establish some connections with the nature of the problems in curriculum research and with what may be thought of as the theory of research in order to place decisions about handling data in their proper setting.

We therefore wish to state, at the outset, that this chapter is *not* a "do-it-yourself" manual. Such a handbook would hamper, rather than help, the cause of research for improving curriculum because it would suggest that such research is merely following directions. Our view, rather, is that curriculum research is a rational attack on problems as they are conceived by the research worker. Consequently, we wish to emphasize choices that the person doing research may make and principles that may guide these choices. We will merely refer the reader to sources that give necessary technical information.

This view implies a conception of the research worker. Not everyone will choose to do research. If one chooses to do research, he necessarily will have to take the pains to learn at least some technical material. There is no escape from this requirement. The amateur research worker cannot be an amateur in every sense. He may do research only incidentally; if, however, his findings are to *communicate* anything, he must not be untutored in educational theory and in the relevant as-

pects of research methodology. We would like to see every classroom teacher a research worker, at least part of the time. We would like every classroom teacher to make systematic attempts to observe, to organize data, to arrive at conclusions about relationships among and between characteristics of students and characteristics of the teaching process, and to have some knowledge of how dependable those conclusions are. These are, in broad outline, the problems of handling data that we wish to discuss.

Curriculum Research

A broad definition of curriculum necessarily poses problems both of ends and means. The question, "What shall be the objectives of education?" emphasizes the ends-in-view. The question, "What learning experiences are most appropriate for achieving these objectives?" emphasizes the means to be employed. This distinction may be primarily a semantic one that is convenient and helpful in considering specific problems; certainly Dewey's view [1] tends to emphasize that values are tested by both their grounds and their consequences, and that as a result a value that is held as an *end* is necessarily also regarded as a *means* in any scientific (as Dewey calls it) consideration of that value. Without, then, postulating a qualitative or species difference between ends and means, it is still possible to examine the school or the educational enterprise from this point of view and make certain distinctions that suggest the roles research may play.

Improvement of the curriculum may come through doing better what schools are now attempting to do, or through attempting to do new things that are, in some sense, better things to attempt. Examples of both types of change exist; in fact, this is merely the notion of two approaches to the problem of educability.[2] The role of research in assisting to determine what the schools should attempt to do is an important one. For example, research on characteristics of children, such as the early investigation of children's interests or of how children formulate and think about problems, undoubtedly played some part in the modification of the program of the earlier years of the elementary schools. Studies of the occupational structure of our society and of the many changes in opportunity for various types of employment also played some part in the introduction of new courses and new pro-

[1] John Dewey. *Theory of Valuation.* International Encyclopedia of Unified Science, Volume II, Number 4. Chicago: University of Chicago Press, 1939.

[2] Ralph W. Tyler. "Educability and the Schools." *Elementary School Journal* 49: 200-213; 1948.

grams, particularly at the secondary and college levels. At least to some extent these modifications represented new purposes, new ends-in-view. The history of the teaching of reading illustrates the role of research in helping the school to do better what it had always attempted to do. The many studies of reading during this century have modified markedly the materials and methods employed in carrying out the task of promoting literacy—a task which the school had long accepted as a major one.

These two contributions of research to curriculum provide a broad basis for showing the ways in which research is connected with curriculum improvement. The distinction of ends and means, however, is not adequate to develop principles for handling the data of curriculum research with sufficient specificity. It is necessary to examine the nature of the different kinds of problems studied in curriculum research to see these guide lines more clearly.

The persistent problem of all education is simply the problem of influencing the behavior of individuals in desired ways as the result of educational experiences. Studying methods of instruction, trying out new materials, examining the organization of the school program or reviewing the history of man's efforts to educate children—all are important simply because they are attacks on this single persistent problem. The problem itself may be seen to have several aspects. Not all learning can be regarded as education. However, education is concerned with learning. Any knowledge which enables us to understand how human beings develop and learn is basic knowledge in curriculum study and development.

It is possible, however, to make a distinction between those studies which attempt to get at important principles of learning and development and those which are related to learning defined by educational objectives and influenced by educational procedures and materials in the institutional setting of the school. No hard and fast line can be drawn, but it is the contention of the authors of this chapter that curriculum research, while recognizing the importance of the basic research in the field of learning and development, moves in the direction of studying the learning of human beings in school with all that this connotes. The importance of this point of view is that it helps direct the nature of the data we are to handle in curriculum studies and the kinds of questions to which we need to get answers.

Education is social in its nature and setting. Studies of the role of the school in the community and in society, of the nature of persistent problems of living, and of normative behavior illustrate studies suggested by the social nature of education. The application of social

processes and group behavior theory to the educational program and the study of self-concepts, role behavior, and motivational patterns in relation to social class backgrounds all illustrate the importance of the social in programs of curriculum study and development. Again, like learning and development, it is possible to recognize the importance of this area of research but to stress the need in curricular research to concern one's self with the applications of this knowledge to the distinctive problems of curriculum.

Education is concerned with values, with the quality of behavior as well as the conditions under which it appears. The nature of the behavior desired and the direction in which changes in behavior should move are stated in our educational objectives. Research in how these objectives are identified, selected, defined and used in the development of more effective educational programs is an area of exceedingly important curricular study. Unfortunately, not much research has been done in this area and there is especial need for study of the ways objectives are defined and used in the important curriculum tasks of selecting and developing the educational experiences of the learner.

Education is concerned with resources and materials and their effects upon the behavior of individuals. Also, education is concerned with the human agents who direct and man the enterprise; and so the behavior of the teacher, as well as the behavior of the student, is a legitimate object of study in curriculum research. Because the school has a given form, structure and resources for achieving its educational purposes, curriculum research often concerns itself with the study of this structure and its resources. Studies of teachers and their education and training; studies of grading, grouping, and forms of instructional organization; and the examination of programs of education all grow out of the work of the school as a total educational institution concerned with achieving a number of important social ends. As these studies are related to their effects on the educational behavior of children and youth, they become essentially curricular in character. As they move in the direction of dealing with questions of buildings, budget and staffing, they become essentially administrative and financial in character. The line of demarcation is not sharp and is basically a question of the intent and orientation of the study.

Education is particularly concerned with the behavior of individuals at a time when those individuals are developing or changing in many ways fairly rapidly, and so education is concerned with the temporal ordering of experiences and with the patterning of experiences. The organization of the school program, its scope and sequence, are important objects of study. In the development of resource units and

teaching plans, the teacher or working group is confronted with one of the key problems in curriculum—how do children, objectives, activities, organizing centers, materials, evaluations and planning procedures all go together to insure learning that is important and adequate in scope, organization and continuity?

This problem of structure or patterns of relationships among the various curriculum components at a higher level is often called the design of the curriculum. Various common names have been given to distinctive approaches, such as the subject approach, problems-of-living approach, and the child-centered approach to curriculum planning and development. Within each of these larger categories of curriculum patterns many specific arrangements have been prepared. In the subject curriculum, for example, each subject field, such as history, geography, biology, arithmetic, has many possible patterns and forms of organization which need to be tested in terms of educational values.

Education is concerned with the adequacy of the results, with evaluation. In addition to the use of the process and techniques of evaluation in attacking research problems in various areas of curriculum study, evaluation itself serves as an area of study in curriculum research. Of particular importance is the definition of objectives in such terms that the means and devices for observation and collection of appropriate data for the valuing or judging phase of evaluation can be obtained. Many alternative hypotheses can be developed concerning the relative roles of the teacher and the learner in the evaluation process according to the various purposes to be achieved in evaluation. Today, this is a problem of considerable interest in curriculum research.

This brief overview of the nature of the problems in curriculum research makes the following points:

1. The problems of curriculum must of necessity deal with problems of both ends and means.

2. Studies in the foundation areas of learning and development, the nature of the society and of social action, and the nature of human knowledge and its related disciplines, while basic to curriculum development, become a part of curriculum research when such studies move in the direction of contributing to the learning of human beings in school.

3. Some of the central problems of curriculum research deal with the identification, definition and use of appropriate objectives; the selection, organization and ordering of significant learning experiences; and the appraising and valuing of both educational means and ends.

An extension and necessary part of these specific problems of curriculum is the over-all problem of curriculum organization or design.

4. Instructional materials, facilities, the administrative organization and the agents of education—the teachers and staff—are appropriate objects of research concern. Such factors become curricular in nature, however, when their action and contribution are tested by their consequence in affecting the behavior of the learners and in the achievement of desirable educational objectives.

Different curriculum problems will result in different kinds of data to be handled. A clear understanding of the nature and place of the specific research problem to be attacked is an invaluable tool in helping to decide what data to gather and analyze.

The Research Process

There appear to be three types of contributions that research in curriculum development can make. The first has to do with the ways one may generalize about a given, unique individual. This is essentially a methodological contribution. The second, a substantive contribution, is the provision of generalizations about characteristics of the clients of education. The third, which is also a substantive contribution, is the provision of generalizations about the operation of an educational program—what we may call administrative generalizations.

The generalization about a unique individual points to one of the kinds of contributions research may make to the educational enterprise. Research can contribute by developing tools or techniques for making reasonably dependable generalizations about a given, unique individual. For schools, this is an important type of research. Chapter Two points out the emphasis on this kind of research, which has resulted during the past 60 years in the development of tools and techniques for assessing such characteristics as intelligence or academic aptitude, various achievements, aspects of personality, and social status.

Research has also served to develop generalizations about characteristics of the personnel of the schools—students, teachers and others. Early studies by Binet[3] and Terman[4] pointed out that students

[3] Alfred Binet and T. Simon. *The Development of Intelligence in Young Children.* (Translated by Elizabeth S. Kite.) Vineland, N. J.: The Training School, 1916. p. 316-29.

[4] Lewis M. Terman. *The Measurement of Intelligence.* Boston: Houghton Mifflin Co., 1916. p. 65-77.

grouped with respect to social status differed, on the average, in performance on the Binet 1911 scale or on the 1917 Stanford-Binet. This finding has been repeated a number of times since then. For example, in 1955 Angelino and Shedd reported that students grouped with respect to socioeconomic status differed systematically in performance on the Davis-Eells Games Test.[5] Such a generalization is an attempt to characterize students—the clients of the school. If it is a sound generalization, it offers the teacher certain expectations. A student chosen at random from a given category, such as "high status," is expected to differ in his measured academic aptitude from one chosen similarly from another category.

Still another type of generalization may be called the administrative generalization. It does not differ, in one sense, from the generalization about a relationship between characteristics of students. However, on the surface it appears to differ considerably. It, too, deals with relationships; however, it tends to emphasize administrative procedures and their relation to outcomes of education. Every teacher has available a number of administrative generalizations that he uses as broad guides to his conduct. He may know, for example, that at least one study suggests that either praise or blame is better for motivating students than not giving students information about their work,[6] and he may use this as a general guide to his behavior in dealing with students. However, if he is an alert teacher he also recognizes that this is a generalization that is "true," if it is true, only on the average, and that it sets only a framework within which he still must teach individual students. This seems to be a reasonable interpretation of the meaning of most experimental studies of teaching methods.

The three kinds of generalizations just discussed: generalizations about a unique individual, about the characteristics of a group of individuals and about administrative and instructional procedures are types of generalizations differentiated by the referent for the generalization itself, i.e., an individual, a group of individuals or an administrative practice. It is possible, in addition, to take any one of these kinds of generalizations and examine it from the point of view of the level or power of the generalization being made. Here the authors of this chapter recognize two major levels of generalization: (a) generali-

[5] Henry Angelino and Charles L. Shedd. "An Initial Report of a Validation Study of the Davis-Eells Tests of General Intelligence of Problem-Solving Ability." *Journal of Psychology* 40: 35-38; 1955.

[6] George G. Thompson and C. W. Hunnicutt. "Effects of Repeated Praise or Blame on the Work Achievement of Introverts and Extroverts." *Journal of Educational Psychology* 35:257-66; 1944.

zations as to the event and the probability of its occurrence and (b) generalizations as to the degree of relationship that exists between any two or more factors or variables. The first is roughly the concept of reliability. The second, as will be pointed out, is roughly the concept of cause.

For example, the faculty of Smithville schools is studying the language arts. The members decide to summarize what the different authors of professional books on the teaching of the language arts say about the time when elementary school children recognize a complete sentence. Their choice of generalization dictates the books to collect, read, notes to take and table of findings to make. The language arts committee studies this table of findings to see what it means. The committee may generalize that all authors agree that elementary school children should, by the end of the sixth grade, recognize a simple sentence. (It should be noted here that this generalization is restricted solely to what the *various authors say*; it is not a generalization directly on the problem of the time when elementary school children *do* recognize simple sentences.)

If the generalization is about the actual occurrence of a desired event, such as whether children wash their hands when they return from the toilet, then suitable observations are made, records of each child's performance on this act are kept, and these data are examined to see what can be said about these children's washing their hands.

The first and easiest kind of generalization is the *generalization about the event*—the extent to which children of this group actually wash their hands during the observation period. If, however, the intent of the study is to generalize about the probability of the children's future performance on this task, observations would have to be made over more extended periods of time. Records would have to be kept which would permit the examination of the patterns of performance of individual children over the different periods of observation. Averages, such as the mean, are merely attempts to summarize the performance of the group in one score. They would be the best single guess anyone could make about the probable behavior of any single member of the group. This guess can be improved if the predictor knows where the individual is in the range of performances of the whole group—an attempt to know the nature of the variation in individual performances. Any guessing about the future performance of individuals is improved if measures of central tendency (averages) and measures of the variation in the total range of performances are known.

The lesson to be learned from this example is that as one starts to generalize about other individuals, other situations or other groups of children from a given set of observations about particular individuals, or to generalize about the degree of confidence a given finding will hold for the future, greater care will have to be taken to make sure that a sufficient number of observations of a particular kind is made to secure a proper base for drawing these generalizations. The more one wants to generalize from a particular set of data, the more care he must take to make certain that it represents the populations or situations about which he wants to generalize.

The second and more difficult kind of generalization to make is the *generalization about the degree of relationship.* Much of the research on curriculum deals with this kind of generalization. We say that "Children who do well in arithmetic are likely to do well in science." "Achievements in speaking, reading and writing are positively related." "Children least chosen on sociograms come from the poorer homes of the school community." "Perception of the goal in learning is more likely to occur when the learner has been involved in the definition of the goal." These generalizations of relationships are usually expressed in terms of correlation as being positive, zero or negative. We can also talk about the factors being compared as varying directly, by chance, or inversely as the case may be.

It should be recognized at this point that the other face of the question of relationship is the question of differentiation. One can ask if supervisory practices of a certain kind are related to certain changes in the behavior of teachers. The same question can be asked in another way. Do supervisory practices of a particular kind differentiate or distinguish among the changes taking place in the behavior of teachers? The first obtains measures of relationship; the second checks the significance of the presence or absence of difference. These questions are simply the two faces of the *same* coin. One can either say that things are related, or one can say that they are not different. Frequently, the second statement is easier or more consistent with the nature of the data being handled than the first.

In dealing with generalizations about relationship, some writers distinguish a special ideal group of generalizations called generalizations of cause. The aim of most research in the physical and biological sciences is to get to basic causes; causes which if known, will enable the researcher to predict and control the related phenomena at a high level of confidence. Mill's canons or tests for causal relations have been the watchwords of research since their formulation. The authors of this chapter, however, prefer to regard generalizations of cause merely

as generalizations about relationships which can be held at a high level of confidence. The ideal of all research is always to maximize the level of confidence with which a generalization can be held and if possible to identify what the independent variable is in any given set of relationships. In research dealing with human behavior, one is not often considering problems of simple cause and effect relationships but is dealing with problems involving variables operating in patterns of dynamic interaction.

This discussion of the nature and development of generalizations reflects the purpose of research in curriculum development, which is to establish a proposition that is more than the record of a single event. Research deals with particulars and rests upon these particulars in such a fashion as to permit generalization. When we add to this the fact that research reflects the intent of fallible human beings and that the particulars of research—data—are observations made through the sense organs of these fallible human beings, we have posed what might be regarded as a paradox. Let us now look at the research process from the point of view of the human agent and attempt to show his role.

Perhaps the most important aspect of the research process in curriculum and instruction is that it constantly must deal with people, their behavior and their purposes and motives. The research process consists of individuals who play several roles. One is the role of the researcher who observes, collects, analyzes and generalizes data. Individuals also are the active agents in the educational process. It is people, not seats, books or classrooms that are reacting, thinking, learning, purposing, and being observed and studied. Individuals, too, are the consumers of the research findings in the sense that they take them and try to use them in the improvement of future educational enterprises. Individuals, finally, are the application points of curriculum research as pupils and learners in schools. People, therefore, do research, are the objects of research, and use research to influence the future behavior of themselves and others.

This consideration of people and their various roles and functions in curriculum research serves to emphasize the importance of the consumers of much of the curriculum research—that is, the teachers, administrators and members of staff groups who are the active agents in applying research processes and findings to the solution of instructional problems. This is one of the basic notions underlying programs of action research in schools.[7]

[7] Stephen M. Corey. *Action Research to Improve School Practices.* New York: Bureau of Publications, Teachers College, Columbia University, 1953. p. 1-18.

Observation

Observation is the basic process in all data gathering. Several criteria have grown up as a way of insuring that the observation process produces the kind of data which permit adequate generalizing to take place.

Observation must have a focus, a center of attention, a place to look. The observer is always looking at something and the definition of what to look at in a research program is an important factor in determining the accuracy and validity of any observations made.[8]

Observations are focused by the selection of the unit for observation. The referent for observation must be related to the problem or question being studied, it must be observable in some form and it must have some quality of completeness or unity in order that it can be distinguished, recorded and handled. The unit used for focusing observations defines also the nature of the data to be collected and analyzed in the research activity.[9]

Observations are focused by the nature of the research purpose to be achieved. Most discussions of research emphasize the importance of defining the problem to be studied in terms of the specific questions or hypotheses to be answered or tested. This is fine when the problem area of study has been so well described and explored that key hypotheses regarding the nature and effects of significant factors are well known. Many studies in the field of curriculum and instruction have not reached this point and are in the stage of exploration, description and definition so that the important questions can be identified and the key hypotheses can be tested.

Observations are improved in the degree that they have validity, breadth, consistency and objectivity. The problem in curriculum research is not one of beginning the process of observation but the more difficult one of improving the process, which is already a part of all individual existence. Observations are improved for research purposes if:

1. There is an attempt to make sure that what is being looked at is a part of, related to, or representative of the problem being studied. (validity)

[8] Helen Peak, "Problems of Objective Observation." Adapted from *Research Methods in the Behavioral Sciences* edited by Leon Festinger and Daniel Katz, by permission of The Dryden Press, Inc. Copyright 1953 by The Dryden Press, New York. p. 243-96.

[9] Marie Jahoda, Morton Deutsch and Stuart W. Cook. "Observational Methods." Adapted from *Research Methods in Social Relations* by Marie Jahoda, Morton Deutsch and Stuart W. Cook, by permission of The Dryden Press, Inc. Copyright 1951 by The Dryden Press, New York. Chapter V, p. 130-50.

2. The total range or scope of the phenomenon or object being studied is observed. (adequate breadth)

3. The phenomenon is looked at more than once, especially if one is dealing with something active and dynamic, as is true with curriculum and human learning. (consistency, reliability, or the perception of the presence and direction of change)

4. More than one person observes to be sure that they see the same thing. (objectivity)

Observations are preserved for analysis and interpretation if they are recorded. Man's memory is limited both in scope and duration. It certainly cannot always be trusted to recall the many facets of human behavior in the complex and changing social situations of the school. Good records are necessary in any attempt to think critically about what happens; good records are indispensable in research. These notes and records exist in many forms—the reading notes of a person using books, monographs, documents, school records, case histories, courses of study, instructional materials; the field notes of a curriculum consultant visiting different kinds of educational programs in cities and counties; the anecdotal record kept by a teacher on an individual child; the verbatim record of a graduate student interviewing teachers or parents of a school community; the tape recording of the discussion and planning of a curriculum committee; the check lists, questionnaires and interview schedules of curriculum workers; and the check sheets, performance records and recording tapes of special appraisal devices and experimental equipment. The nature of the record to be kept depends on the nature of the problem being studied, the kind of observation units to be recorded and the kind of analysis to be made. All kinds of research efforts require that some record of observations be kept.

The major caution to be remembered in recording the products of observation is that what is actually happening, being said, being reacted to should be recorded and not what the observer judges the merit or quality of the behavior to be. The record should not be in terms of opinions or valuing statements. This kind of record makes it impossible to go behind the opinion to the data being observed and the criteria being used to make the judgment.

Selection and Collection of Data

We have attempted so far to suggest that the handling of data in a curriculum research problem cannot be divorced from the research worker's conception of the research process or from his con-

ception of the problems to be attacked in the attempt to improve the curriculum. Both these conceptions lay down broad limits within which the research worker operates.

The historical review of research in curriculum in Chapter Two and the analysis of curriculum problems in the previous section have indicated that curriculum problems are as broad as education and as complex as are human beings. To leave curriculum problems on this level of broad generality would be to discourage every individual trying to improve his understanding of the field of curriculum and instruction. Teachers, school staffs and curriculum workers have to catch hold of their difficulties and problems at the point they can with the expectation that as their understanding of the problems grows and their skill in dealing with them improves, they will be able to move closer to vital areas. The nature of the data with which the research worker will struggle is determined by the nature of the selection and formulation of the research problem.

The curriculum problem to be studied must be perceived to be within the area circumscribed by its nature and subject matter. The perception of a problem as belonging in the area of group behavior, as a problem of instructional method in arithmetic, as a problem of evaluation of process objectives, or as a problem of testing the comparable contributions of two films helps identify the area of knowledge and experience which can be tapped for dealing with the present concern. It also marks a broad field of data within which a subsequently more precise selection of specifics is to be made.

One way in which the curriculum problem can be reduced to manageable size is to identify and select the kinds of data which should be collected and analyzed. In a study [10] of how teachers use objectives

[10] Marcella Nerbovig. "Teachers' Perceptions of the Functions of Objectives." Unpublished doctoral dissertation. Madison: University of Wisconsin, June 1956. The three questions used in the private structured interview were:

"1. On the basis of your experience in teaching we would like to ask you about the things that are important to keep in mind in pre-planning for teaching a unit or a day's lesson in social studies.

a. Would you name about half a dozen things that you actually keep in mind as you pre-plan for teaching?

b. Is there any order in which you use these?

"2. In planning for teaching, a number of decisions need to be made.

a. In planning a social studies unit or a day's lesson there are many things that could be done and many materials that might be used. How do you know which activities or experiences, and materials to select?

b. Similarly, at the planning stage, how do you know how much to plan to do?

c. How do you know what to emphasize in your planning for teaching?

d. On what do you base your evaluation?

"3. What use do you make of objectives in your planning for teaching?"

in their instructional planning, the reduction process moved through several phases. A decision was made to interview a selected population of experienced teachers and to ask them how they used objectives in their instructional planning. This decision was made after considering the feasibility of observing teachers in their classrooms and of inferring from this observation the role of objectives in their teaching. Consideration was given to the nature of the data possible to get, the way in which these data could be collected, and the time and availability of populations of experienced teachers. The study was finally limited to asking seven questions of a sample of 52 superior teachers and the analysis was limited to the examination of the records of these interviews.

When the problem exists in an area where considerable work has been done and the key variables are fairly well identified, the formulation of a problem will contain hypotheses which will direct the selection and analysis of the specific data. If, however, the key variables have not been found, identifying these becomes the purpose of research. Research in curriculum should not be limited to carefully controlled experimental studies of comparable ways of producing change.

A study of "how objectives in curriculum should be defined in order to facilitate teacher use" started out by trying to test the hypothesis that "the specific function to be performed by an objective dictates the nature of its definition." The staff group studying this problem soon found that other hypotheses [11] needed to be considered at the same time.

A group of teachers were interested in how to develop vocabulary growth in social studies and thought that visual aids could help. They phrased their study in terms of this hypothesis: "The retention of vocabulary for six months following the termination of formal study of a unit will be affected by the use of selected audio-visual aids."

Another group reported by Corey [12] started its study of the biographical method in social studies with these hypotheses in mind:

"1. A substantial positive correlation will exist between scores measuring information pupils have learned about famous Americans and the extent to which these same persons are admired.

"2. The degree of admiration for famous American historical personages will be appreciably increased as a consequence of one semester of instruction in American history.

[11] Questions and hypotheses are forms of statement used to achieve the same research purpose. Any hypothesis can be asked in the form of a question and vice versa. Most people like the positive declarative form of hypothesis.

[12] Stephen M. Corey, *op. cit.*, p. 62-63.

"3. A measurable degree of relationship will exist between the degree to which these historical persons are admired and the reputation that pupils have among their peers for behaving in a manner consistent with the traits explaining the admiration."

Data are collected and analyzed more effectively if some time has been spent in trying to anticipate the steps to be taken, observations to be made, records to be kept and the ways in which answers are to be obtained from the data examined. Many times, however, the specifics of some of these steps are determined as the research moves along. Very few studies in curriculum are completely planned in advance. All research problems will be improved, however, if some planning and thought are spent on the problem of determining what kinds of data should be collected and how it should be analyzed in advance of involving children, schools and teachers.

While the previous suggestions may help, the real process for formulating and delimiting a problem consists of trying to think through or to imagine in every possible way the kinds of data that are most closely associated with the heart of a problem and how it would be possible to secure these data.

For example, a group of teachers were interested in finding the ways in which elementary school children solve arithmetic problems. Their first thought was to collect the daily arithmetic papers of the sixth grade groups and study these papers for errors, methods of work and the ways in which children thought through their solutions. A second approach was to try to take three representative problems and to set up all the alternative ways in which these problems might be solved by (a) analyzing the problems for possible logical solutions, (b) trying the problems out on different groups and finding the different methods of solution used by them and (c) asking a group of very good students and a group of poor students to work through these problems and to ask each one to tell what he would do, why he would do it and what he thought about when he did it. These findings were checked against what was found in the literature on problem solving in arithmetic; and three or four different "recommended" or "well-used" methods of thinking about these problems were identified. Then, some curious hard-minded soul among these teachers asked, "How can we tell which of these methods of problem solving is best? They all get the right answer!"

In the above example, the teachers' search for the different kinds of data they needed to consider in dealing with problem solving caused them to develop different statements of the problem. Finally, they realized that now they were confronted with a problem of comparative

goodness and/or efficiency in method to be resolved either by recourse to educational objectives and mathematical values or by setting up a comparative experiment for testing the alternate procedures.

Selection of the Unit for Observing and Recording Data

One of the puzzles every person faces in dealing with problems of research is how to determine the nature of the unit which he is going to observe, count, scale, differentiate or generalize. In dealing with curriculum problems these units of reference may be a single individual; groups of individuals having a recognizable social or educational coherence; concepts, abilities, attitudes usually identified as objectives or as a unit of defined behavior; settings or situations in which the educational action takes place; and objects or materials which have a recognized educational use such as films, maps and instructional materials.

The unit to be used should be something which exists in some kind of recognizable or defined completeness. It should be a whole which can be distinguished, counted or compared. It should have some kind of organic unity such as an individual, a picture, an idea or an act.

One of the first tasks of handling data in curriculum research is the description and definition of the units in which the data is to be observed and categorized.

An illustration of the nature of this decision was found in an attempt to study the act of handwriting of elementary school children. Since handwriting is associated with written language, the first unit considered was the writing of the sentence—"The quick, sly fox jumped over the lazy, brown dog." This unit of experience was selected because it contained all the letters of the alphabet. The sentence also made sense—a unit of thought. It was composed of words—all having some beginning and end and with some kind of meaning. These words were composed also of recognizable letters.

The research worker at this point is confronted with not one unit of language but three—the complete sentence, the complete word and the individual letter, existing on different levels of language use and all possible of identification, counting, comparison and judging. It was possible further to break down an individual letter into characteristic strokes and pressure patterns which would serve as a unit of analysis.

If one finds so much to consider in a relatively simple handwriting

study, he can easily see the difficulty in deciding on a unit for observation in dealing with complex human beings and their many purposes, thoughts, abilities and appreciations.

The research worker, however, has a few common sense rules which help him select an appropriate unit to use for a particular research purpose. The unit to be selected should be as *representative* of the phenomenon as possible and should not be any *smaller* than the unit the observer can *distinguish*.

In the example cited, when the purpose was to judge the legibility of the act of handwriting, units less than the complete sentence could not be differentiated as to levels of legibility by the judges. Total judgments of the sentence sample could be made with a fairly high level of consistency but no other aspect of the writing such as the alignment, spacing or individual letter formation could be used to differentiate levels of legibility. The unit used for this purpose, then, had to be the sentence unit, not because other units could not be identified but because this was the only one which could be distinguished in terms of the quality being considered. The task of selecting the appropriate unit to use for observing and analyzing data in dealing with a research problem frequently requires as much thought as do the other aspects of the research process.

A person as the unit. In the handwriting illustration used above, a behavioral act—the writing of "The quick, sly fox . . ." formed the focus of attention and a large number of individuals undertook the task of writing this sentence under various defined conditions. Here an act was surrounded with individuals to form a constellation or universe of "The quick, sly fox . . ." 's. In curriculum research, many times, however, a person, a group, a school system, rather than an act of behavior, is the unit for consideration. If in contrast to the handwriting illustration, an individual forms the focus of attention, a universe of his behavior is identified and collected. The individual would write under different conditions of purpose and time, using cursive and manuscript writing, and in different writing settings, thus forming a constellation of his handwriting behavior. Comparisons made within and among these conditions might indicate that his writing would become less legible as he increased his speed, the more informal and casual the purpose, when he changed from manuscript to cursive writing, and as he increased in age.

When a given task of handwriting was used as the unit of observation, each instance of the writing of the selected sentence could be attached to an individual. The research worker could start with a particular group of sentences selected because they were of high or

low legibility, then use these sentences to identify the individuals who wrote them in order to see if some kind of relationship could be identified. Similarly, the individuals who wrote the sentences could be examined. The oldest, least intelligent, or those having a particular pattern of instruction, could be identified, and the collection of sentences written by this group examined on the basis of some hypothesis.

When the individual is a unit of observation, however, and everything that he does is recorded, it is very difficult to make some of these cross-connections. The research worker is confronted with a large mass of uncategorized data. Yet this is the kind of action and observation so important in curriculum and instruction. The limitation frequently placed on the observer to consider only particular acts in specific situations under controlled conditions in order to achieve comparisons and generalizations, often directs the research away from the units of observation and the "real situations" which have meaning in curriculum and which can be understood and related to instructional practices by teachers and school staffs.

A group as the unit. What has been said about using an individual as a unit of observation and data applies to the group. While everyone will accept the concept of a social group as having unity, this unit is not as accessible for determination, counting and handling as is the physical being of the individual. What do you consider when you try to study a group? The number of individuals physically found in a given setting? The problem focus, the pattern of interpersonal relations, the feeling of cohesion, the average accomplishment of a group of children in a given grade? To all these questions, one can answer both yes and no, with the feeling that any single answer is incomplete. Yet much curriculum research is directed to a study of the behavior of groups defined in certain ways.

The above questions indicate that in dealing with both individuals and groups as units for observation it is necessary to develop a system for categorizing data.

Determination of a category system. When an act or a unit of behavior such as throwing a ball, solving an arithmetic example, answering a question or opening a door is the object of attention, the performance of individuals can be observed in such an act or unit. And further, these individuals can be recognized as belonging to identifiable groups such as the third grade, Miss Jones's group of sixth graders, ten-year-olds in a science class, or all teachers in a working group determined by their common interest in problems of teacher-pupil planning in the classroom. The performance of the members

of these groups in these acts or units of behavior can be observed and summarized as representing the group.

The problem of determining the category system for dealing with total behavior of an individual or a group, however, is much more difficult. Many acts, many kinds of behaviors are involved; the need for a system of categories for arranging, checking and generalizing is evident. The categories used or selected by the researcher are based primarily on some theory of what is important in group behavior. It is good theory if the number of components or variables to be observed is reduced to a minimum, if these variables account for all the behaviors associated with groups, and if the knowledge of these variables will permit the prediction or control of the phenomena. It is less valuable theory to the extent to which these conditions are not true.

The staff working on the Conference Research Project of the University of Michigan [13] looked at group behavior in terms of two major categories: (a) the problem-solving processes of the group and (b) the content of the meeting of the group. These larger categories were broken down into smaller units for observation purposes.

The problem-solving category included goal setting, problem proposing, information seeking, information giving, solution proposing, development seeking, development giving, opposing, supporting, summary seeking, summary giving, and nonproblem directing.

The nature-of-meeting-content category was broken down into:

1. Notation of each topic discussed
2. Classification of each topic into one of the following:
   a. Procedural: having to do with the procedures or processes of the group
   b. Substantive: having to do with the subject matter of the meeting
3. Notation of the nature of the task confronting the group at each point on its agenda, using the following categories:
   a. To arrive at a decision
   b. To approve a decision already made
   c. To receive or give information
4. Observation of what actually happens to each item on the agenda by noting whether the agenda item was:
   a. Completed
   b. Postponed
   c. Left uncompleted.

[13] As reported by Roger W. Heyns and Alvin F. Zander, "Observation of Group Behavior." Adapted from *Research Methods in the Behavioral Sciences* edited by Leon Festinger and Daniel Katz, by permission of The Dryden Press, Inc. Copyright 1953 by The Dryden Press, New York. Chapter IX, p. 383-88.

After observing the behavior of the group in these categories, the observer also rated the meeting on its aspects of communication, motivation and interpersonal relations.

In the development of any observation plan for dealing with individual or group behavior as a unit for observation and study, several decisions must be made.

The nature and size of the unit of observation must be determined and agreed upon. The unit may vary from a single act to a total meeting. The larger the unit the more difficult the observation. In curriculum study, however, the larger unit frequently yields more significant results.

Whether to record all the acts of behavior at meetings of the group or to sample these acts must be determined. There is real danger in sampling unless there is some comprehensive plan or theory of group behavior in curriculum and instruction directing the sampling. It is nearly impossible to record all individual and group behavior even for one specific act. Those studying any curriculum problem must investigate how any sampling or selection of the units of observation will affect the problem being studied.

Categories must be established into which the total phenomena of the research problem can be divided and under which the specific data of observations may be placed for analysis. These categories should be as closely related as possible to the factors which differentiate the problem and should be sufficiently representative of the data to permit all the specifics of the data to be placed in some category.

Additional decisions to be made by observers of group behavior include: (a) the extent to which the setting or context of the act is to be recorded; (b) the extent to which the intent of the individuals in the group is to be inferred and used to influence the records of the observer; (c) the extent to which the consequences of the acts are to influence the records and judgments made about them [14]; and (d) the extent to which the observer is a member of the group and its action.[15]

A setting as the unit of observation. Three kinds of settings are characteristics of much curriculum research: the setting which involves a large population of schools, communities or people, deter-

[14] N. Polansky and others. "Problems of Interpersonal Relations in Research on Groups." *Human Relations* 2:281-91; 1949.

[15] M. Deutsch. "An Experimental Study of the Effects of Cooperation and Competition upon the Group Process." *Human Relations* 2:199-231; 1949.

mined on a national, regional or state basis; the field setting which deals with real schools in specific communities or with certain teachers and groups of children in real school-community situations; and finally, laboratory settings which tend to deal with small numbers of individuals in carefully controlled and narrowly defined conditions.

In general, as one moves from a setting involving large populations to a laboratory setting, there is an attempt to increase control of the research situation. There is more attention to keeping certain conditions constant. Greater significance is attached to the independent variables being modified. Greater precision is attempted in the measurements being made. Increased control does not mean, however, that laboratory studies are more important in curriculum research than field studies or surveys of large populations. It merely means that each research setting has its own important reason for being and makes its own supplementary contribution to the total research effort.

The total population as the setting. It is necessary, at times, to explore and describe the history and status of curriculum problems such as teaching practices and educational programs in a given total population—e.g., all of the one-room rural schools in the United States; or reading instruction in first grades; or the way junior high schools fit into the organization of the common school in American school communities. Such studies are basically surveys, using common survey techniques—the interview or questionnaire. Such studies are based on some concept of a total population or a representative sample.

The determination of the population setting for the study comes primarily from two sources: (a) the definition of the curriculum problem to be studied and its implication for the population to be selected—a curriculum for six-year-olds or fourteen-year-olds, rural or urban schools, elementary or secondary school subjects such as handwriting or social studies, tax bases, administrative organization, educational objectives, or audio-visual aids; (b) conditions of time and educational or political geography—i.e., should the survey cover a ten year period and the southern states? As one moves from generalizations about the status or the event to generalizations about factors or conditions which differentiate practices, these populations need to be more sharply defined.

A given school community as the setting. Some studies should be devoted to examining curriculum problems in real-life settings with the people who are responsible for such programs as active participants in the research activity. The field setting is the place where the action research emphasis finds its reason for being.

The very nature of the field study demands that the setting be recognized as an important unit of observation. The study of a reading program in rooms well equipped with reading materials, with space for tables and working and interest centers, with a fine library of children's books, and with a teacher who accepts and supports children's attempts to use language for meaningful and significant purposes is one matter. A study of the same reading program in a room with limited reading equipment, completely filled with desks, with no recreational or literary reading material, and with a teacher who has strict and arbitrary expectations of children's performance, is quite another.

Increased attention is being paid to the social and cultural environment in which a given school, group of children, or community exists and its effect on educational programs and learning behavior. The implication of the findings in this field re-emphasizes the importance of the observations of such settings in the study of curriculum problems.

The laboratory as the setting. There are not many laboratories studying curriculum problems. Few laboratory schools connected with colleges and universities and school systems have developed programs. Here the setting is carefully defined and used as the basis for the experimental effort. Insofar as possible in laboratory research, the setting is held constant for the manipulation of the experimental variables or, perhaps, the variables are controlled and the setting itself is systematically varied. As one moves toward the laboratory setting or the study of a unique single classroom group or individual, the definition and control of the setting for the research problem become increasingly important.

A note on history as a research setting. The more one thinks about curriculum research, the more one tends to see much of it as being *ex post facto*. Much of the teacher's attention is devoted to an attempt to explain what has happened, as he remembers the history of events in his class. In making this effort, it must be noticed that the events were not planned in advance, the independent and dependent variables were not carefully defined and observed, the independent variable was not systematically changed and the effect on the dependent variable was not observed and analyzed. Rather, the teacher is caught between the past and the immediate future and must make predictions about the future on the basis of things which have already happened.

Case studies of individual children, individual classes, individual programs are valuable for looking back to see the patterns of rela-

tionship among important factors, existing in the given situation, which seem to explain what happened. The important need in such *ex post facto* studies is to have sufficiently accurate records kept for a long enough time to identify trends, patterns, tentative cause and effect relationships, and to compare portions and sections of the record on some differentiating basis. The importance of this kind of research effort in curriculum is self-evident. There is great need to study the kinds of records that should be kept, and the methods of analysis which should be devised to exploit the values of this experience.

Curriculum materials as units of observation. Frequently in curriculum research, curriculum materials are the objects of attention and serve as the unit of observation. An article on the Philippines may be written in two different ways and used with children to see what the effect of the two different organizations and writing styles will be. Pictures of animals may be made, one set drawn to a common scale and others with the same animals drawn to different scales. Other sets of pictures of imaginary animals which are not drawn to the proportional dimensions of the real animals may also be made. These sets may be given to children to determine the extent to which they can obtain an accurate sense impression of the size and dimensions of the real animals from these different scale drawings. Generalizations growing out of these studies may have implications for the development of instructional materials for use with children.

In a similar way, maps, charts, globes, films, textbooks, pencil and paper materials of all kinds can serve as units for observation and study. From this point of view, it is possible to study any object or set of materials that is used to influence the behavior of individuals to achieve some educational purpose.

Considered as units of observation, these objects and materials are different from individuals and groups of people, in that they have no capacity for changing or modifying themselves. These objects, therefore, can be made to exist in different forms, but the effect of changing their form can be seen only in the behavior of the individuals who use them for some purpose or who react to them in some way. In this sense, a picture as a unit of observation in curriculum research is similar in nature to the setting for individuals. Objects do influence the definition of a situation, they do cause attention and behavior to be focused one way rather than another, and their essential purpose does influence activity. As such they are legitimate items of research. Objects are, however, really settings in which learning behavior can take place. Different educational objectives and uses can modify and redirect the nature of the reactions children and

teachers make to objects. The observation of curriculum objects will always have to be in relation to people and to their behavior as related units of observation.

In summary, several units which may be observed in curriculum research have been identified: the defined act of behavior, the individual, the group, the setting and the curriculum material or object. It has been shown that, while it is important to define and limit these units for observation purposes, there is little research in curriculum which can be confined to any one unit alone. The task of curriculum research and the definition of units for observation and recording will be to define and observe these units in such a way that settings, people, and acts of behavior can be related and transpositions made from one to the other.

The task of observation in programs of curriculum research will always be difficult, will always involve multiple units, and will always be preoccupied with the relationships which exist among these units.

The Organization of Data

The previous section concerned itself with the selection of data in terms of the research problem and its definition. One of the important definers of the nature of the data to be selected was the nature of the available observation units. This section emphasizes the following points. A single datum arises as a result of observation by a human being. A set of data, to be useful, is organized according to some principle. Data are records of observations and as such are unique events that are time-bound and situation-bound. Research, however, attempts to organize these events in such a way as to permit some kind of generalization. The conception of a population of events that might be observed is brought to the research process by the research worker; several types of populations may be identified. While a method of identifying the unique events that are to be observed is implied by the way in which the research is conducted, certain methods have great advantages when the data are analyzed. A scaling system, or unit of measurement, is implied by the way the research is conducted; different methods of treating or analyzing data are related to the choice of a scale.

A single *datum* may be regarded as the record of an event. Depending upon the choices the observer made of what to look for, or attend to, and the accuracy with which he observed what he intended to, the record of the observation describes *some* event more or less

accurately. It is clear that the record may not describe *the* event which the observer believed he was observing; experiments with perceptual illusions illustrate this. That something we may call choice is involved in every observation is well known. No one can observe "in general." He must focus his attention; he must select what to see or hear or taste or smell or feel. It is in this sense that one may say that any datum is selected or, if you wish, created. Necessarily, then, the research worker, by selecting a given datum, rules out the possibility of arriving at certain conclusions and makes more likely the possibility of arriving at other conclusions.

The notion of a *set of data* emphasizes this making more probable certain conclusions. We can conceive of a set of data that is not organized. One datum describing a particular sunset plus one describing an action of Robespierre is likely to be an unorganized set. To arrive at a conclusion (other than the rather trivial one that this is an unorganized set) demands the selection of data according to some organizing principle. That this organizing principle is a point of view is quite evident. The psychiatrist has an organizing principle which defines the stream-of-consciousness reports of a patient as an organized set of data. From such data he may arrive at a conclusion regarding the patient; from such data for many patients he may arrive at a conclusion that is a generalization about these patients. He may go even further and use such data to arrive at a generalization about all patients of a given type.

We are here using the term *generalization* in what may be regarded as a loose fashion. We are using description to refer to the single datum, and then suggesting two types of generalization: one, a conclusion about a given finite set of data; and two, a conclusion about a larger finite, or infinite, set of data of which the given set is some kind of sample. Note that we have not necessarily restricted the set of data to observations of different individuals. The data might be observations of the "same" individual on many occasions. The generalization is then one for that individual, and not for a group.

Replication

The notion of a set of data implies replication of some sort. In fact, any statistical treatment demands replication. If we restrict ourselves, for convenience, to the study of human behavior, we note three rather obvious replication principles. These are at least the large outlines of organizing principles that define a set of data. We may focus our attention on (a) individuals, (b) variables or measures,

or (c) time. The first—*individuals*—suggests what is perhaps the most common replication principle. We study a class of individuals, making the "same" observation for each one, often at the same time. This principle gives what is often called a "status" study. For example, Miss Jones, the arithmetic teacher, gave the same test on the addition combinations to the individuals in her third grade. The status of their arithmetic performance could be determined from this common "observation" of the arithmetic behavior of each individual.

The second organizing principle—*variables or measures*—emphasizes what we are today calling the profile problem. Here we gather for *one* individual, often at the same time, a set of measures or observations. Replication in this simple situation means merely looking at a number of aspects of the behavior of a given individual. The profile for a student on the Minnesota Multiphasic Personality Inventory is an example.

As a third organizing principle, we may focus on a given individual and make repeated measurements of the same factor over time. A learning curve for an individual, or the "constancy" of his IQ illustrates this.

The Concept of Stratification

When we place students in categories, i.e., when we classify them in some way, replication exists in each category or class. Such categorizing *stratifies* the group we are studying. For each stratum (category, class) we collect a set of data, thus allowing for generalizations about an individual's place in his category, as well as in the group as a whole. Sex differences in language skills, for example, have been studied extensively. Such a study stratifies students into two classes: boys and girls, and then compares the two groups. Essentially, this is a correlation or association problem; the conclusion is that a relationship exists (or does not exist) between the sex of the student and his language skills. As it happens, there is quite a bit of evidence that sex is correlated with the ability to spell.[16]

It is possible, of course, to have a more complicated stratification principle. Instead of two categories, such as boys and girls, we might have several categories, such as students at each of several chronological age levels. Here the comparison of the various groups poses some problems. If we have five age groups, for example, then we

[16] Lewis M. Terman and Leona E. Tyler. "Psychological Sex Differences." *Manual of Child Psychology.* (Edited by Leonard Carmichael.) Second edition. New York: John Wiley and Sons, 1954. Chapter 17, p. 1064-1114.

might make comparisons for the 10 different pairs. This is sometimes done without realizing that, if the intent is to examine the possibility that observed differences are statistically significant, the five age groups should be compared simultaneously (as in an analysis of variance) before differences in pairs are attended to.[17] We might further complicate our stratification procedure by including both boys and girls at various chronological age levels. With five age levels, we now have 10 distinct groups, which provide 45 distinct pairs. To treat such a set of data so as to arrive at fairly dependable conclusions about the correlation of sex or of age with the characteristic being measured demands a certain amount of statistical sophistication.

Another example of a problem introduced by stratification is the analysis of clusters or intact groups. Because schools are local, drawing their students from relatively homogeneous neighborhoods, we often observe a clustering of students with respect to one or more characteristics within the school. For example, suppose that we gave a spelling test to Grade III students within an elementary school located in the Puerto Rican section of New York City and gave the same test to Grade III students in Evanston, Illinois. We probably would discover a marked difference in mean score for the two groups. We also would be likely to find that within each school group, the scores tend to cluster more than would scores for a random sample drawn from all Grade III boys in the United States.

This is an example of one of the elementary principles in inferential statistics. If we categorize a large population into equal size subgroups that are similar with respect to variance (roughly, the spread of scores) but systematically different with respect to mean score, then we find that the variance of the population is a function of both the variance within the subgroups and the differences in mean of the subgroups, that is, the variance between groups. This concept lies behind the analysis of variance technique which may be used under certain conditions to determine statistically significant differences in means for two or more groups. At a very simple level, the meaning of such a significant difference is that it is unlikely that these subgroups could have arisen by the operation of a random allocation of the cases to the groups.

Since many studies in education employ clusters or intact groups of students, it is important to emphasize some of the cautions in han-

[17] See Allen S. Edwards, *Statistical Methods for the Behavioral Sciences*, New York: Rinehart and Co., 1954, p. 329-35. Edwards gives a relatively simple discussion of possible methods of treating the various pairs following an analysis of variance.

dling such data.[18] Studies of teaching methods often use, necessarily, intact groups as the samples. If the research worker wishes to arrive at a conclusion that goes beyond a simple historical statement that such and such a method was better at this time with these particular students, he must design his study so that he can at least take account of the possible systematic differences between clusters. Ordinarily this will demand an analysis of variance, or co-variance design and consequently a certain sophistication on his part.[19] Whenever a "natural" stratification, such as that presented by the existence of neighborhoods, schools and classes within schools enters into a design, the research worker must take great care in handling his data—again, assuming he wishes to communicate more than a simple historical fact.

We have already discussed replication with respect to individuals, to measures and to time. These principles may be used jointly, rather than singly, with the result that the design of the study may demand relatively complicated procedures for analysis. Rather than focusing on several characteristics of a single individual, we may wish to focus on these characteristics for a number of individuals, i.e., replicate two ways. The so-called generalized learning curve, which has been criticized quite often, is an attempt to summarize such a set of data. The group profile is another example.

Some of the criticisms of such treatments of data stem from their failure to summarize a second important aspect of the data. The aspect summarized is ordinarily the central tendency, or average value, at each of the points in the profile or learning curve. The neglected aspect is the dispersion or scatter at each of these points. We often hear that good instruction tends to widen, rather than narrow, individual differences. Learning curves for an achievement for which this is true should show a greater dispersion or scatter of performance scores toward the end of the instruction than toward the beginning. A generalized learning curve that plots only mean or median values at each point in time, however, does not reveal this.

It would be possible to elaborate at great length the kinds of studies that can be identified by considering ways in which the data are organized. What we have done here is merely to suggest some of the considerations in experimental design that are important in the han-

[18] It may be interesting to note that Kinsey's first study of sexual behavior was criticized for its failure to handle cluster samples with proper caution. See William G. Cochran, Frederick Mosteller and John W. Tukey, *Statistical Problems of the Kinsey Report*, Washington, D.C.: American Statistical Association, 1955. Appendix D.

[19] See E. F. Lindquist, *Design and Analysis of Experiments in Psychology and Education*, Boston: Houghton-Mifflin Co., 1953. Chapter 7.

dling of data. The notion of a population has been introduced, and we have suggested the distinction between a finite and an infinite population. We also have suggested that a population may be regarded either as stratified or as not stratified. In this we are implying that a population is defined—in a sense, conceived—by the investigator, and that this definition should be related to his purpose in doing the research. We also suggest that the way in which the data is treated must be related to the way in which the population is defined.

The Principle of Randomization in Selecting

We can identify sampling procedures that permit certain kinds of statistical treatment of the data. One is complete sampling, and necessarily implies that the population is conceived to be finite. For this case, descriptive statistics, as they are commonly called, give the appropriate methods of treating the data. These methods are primarily methods of summarizing a set of data so as to reveal certain characteristics of the data, such as central tendency, dispersion or association.

Often, however, it is not possible to deal with a complete population, or economy of time makes it important to generalize about the population as a whole, without considering every unit in it. In this case the principle of randomization in the selection of the particulars is a powerful principle. Randomization permits what we call statistical inference, which is the drawing of a conclusion about a population from the examination of only a portion (often a small fraction) of the possible cases that might be examined. The methods of statistical inference also provide for a statement of statistical significance, which is essentially a statement of the risk one runs in accepting the conclusion that has been drawn.[20] This is an excellent feature of inferential statistics, since it warns both the investigator and his audience that the conclusion may be erroneous and since it gives a measure of the risk one runs in believing this conclusion.

Methods of statistical inference have been developed for the case of simple random sampling from either finite or infinite populations. The methods differ for these two cases. Methods have also been developed for other types of sampling, such as the systematic sample. It probably is fair to say that a major methodological fault of educational research is a failure to sample in such a way as to permit the type of treatment of data that is employed and the kind of conclusions

[20] Actually, there are two types of risk, and we are neglecting one. The interested reader should turn to any recent statistics text for a discussion of the two types of error, as they are called.

that are drawn.[21] Much greater sophistication in integrating the operations employed in gathering the data and in treating the data is badly needed in educational research.

Scaling

We elaborated previously on what we called the units of observation. What we were attempting to do was to talk about populations and at least to suggest the range of populations that might be considered for research in curriculum development. The measurement problem was also touched on indirectly. It is pertinent now to attempt to describe a way of thinking about measurement and the scaling problem that is usually regarded as a part of it.

Measurement may be thought of as a mapping operation; a way of locating points, perceiving their relative positions and, if appropriate, reading off distances between two given points. For example, let us consider that we have defined a population of human beings about whom we wish to state one or more propositions, and that our research plan also specifies some trait or characteristic, such as social class, or intelligence, or favorable attitude toward the school, or the like, in which we are interested. To measure one of these traits or characteristics for this population involves choosing a scale consisting of a set of symbols, and also involves developing the operational rules that permit an unambiguous mapping of an element of our scale onto each person, i.e., assigning or relating one of the symbols to each member of the population. The scale itself, therefore, may be thought of as a set of symbols; however, associated with this set of symbols are one or more agreements or rules of the nature of the relationship among the symbols that also characterizes the scale. Suppose that, for example, we wish to classify persons into one of two classes: male and female. We employ, therefore, a scale consisting of only two elements, and we might use as symbols to represent these elements any that we wished—*A* and *B*, or *M* and *F*, and *O* and *1*. If we wished to use *O* and *1*, we would have to remember that these are not numbers in either an ordinal or cardinal sense. Only one rule appears to be associated with this set of symbols in this example; namely, that *O* is *not 1*. In other words we are merely categorizing (differentiating and grouping according to some principle), and not ordering or meas-

[21] The reader who is not aware of the several sampling plans appropriate to the methods of statistical inference should read Francis G. Cornell, "Sample Surveys in Education," *Review of Educational Research* 24: 359-74; December 1954. For an extensive discussion of sampling from finite populations, see William G. Cochran, *Sampling Techniques*, New York: John Wiley and Sons, 1953.

uring in the ordinary sense of the word. Our mapping operation, therefore, would be reasonably straightforward; we could write out the rules for making observations that would permit this categorization with a high degree of accuracy, i.e., we could attach the proper symbol to each individual easily and place him in the proper category with little error.

A scale such as this is usually called a nominal scale. Any set of categories for classifying data gathered through observations forms a nominal scale. This scale may consist of more than two symbols, as it would, for example, if we wished to categorize adults into the various Protestant denominations with which they are affiliated. The rule associated with the set of symbols, however, would be the same: no one symbol is the same as (equal to) any other. Anything placed under category B must be different in some respect from anything placed under category C. To complete our measurement system we would then have to write the rules for making the observations that would enable us to determine which symbol is to represent each individual on our map. Viewed this way, measurement, as a generic term, includes a set of subjects or objects (the observation units) to be observed, a set of symbols plus the rules of relationship among these symbols, and a specification of the operations for relating a symbol to a subject.

We commonly think of four types of scales: the nominal, the ordinal, the equal-interval, and the ratio. The nominal scale has been illustrated above. The ordinal scale often uses the ordinal numbers (first, second, third, etc.) as its elements. The sense behind an ordinal scale is that you have not only been able to place your data into differentiating categories but you have also been able to arrange them according to some principle, norm or sequence of operations which permits category A being marked first, B, second and so on. When we use percentile ranks to describe students we are using an ordinal scale. In using such a scale, one should recognize that an ordinal scale merely denotes relationship in the sense of ordering. It does not tell the distance that exists between first and second, or fifth or sixth. There is no assumption that there is the same distance between any two points on this scale. Many data in curriculum research can be seen as being different from one another—that one classroom, or handwriting sample, represents better teaching or legibility than another—without our being able to determine how much the difference is.

The equal-interval scale has all the advantages of the ordinal scale plus the quality that the distance, say, between 90 and 60 on a scale

is equal to the difference between 31 and one. Here, differences, ordering of differences, and equal intervals between differences are postulated. Quite often we assume that many of our measures constitute equal-interval scales; we treat test scores, for example, as if adding them were meaningful.

Finally, the ratio scale has all the characteristics of the equal-interval scale plus a "true" or "absolute" *zero point.* It is of interest to observe that some of the scales used in the physical sciences, such as a scale of hardness used in geology and the familiar centigrade scale of temperature, are *not* ratio scales. The former is an ordinal scale and the latter an equal-interval scale. With the development of the Kelvin scale, physicists produced a ratio scale for temperature.[22] Because of the difficulty in determining either a zero point or a point of "perfect" or "ideal" quality in curriculum and instruction, the building of a ratio scale, while desirable, is very difficult and seldom accomplished.

It should be remarked that for these four types of scales, any higher-order scale, that is, a ratio scale, has all the properties of a lower-order scale. Thus we could treat an equal-interval scale as if it were simply an ordinal scale. This "declassification" of scales sometimes is made to permit the use of certain non-parametric statistical procedures.[23]

The purpose of considering scaling here is to suggest that the analysis of the data is governed in part by the choice of a scale. For example, the use of a nominal scale determines to some extent the statistical procedures one may employ in describing his findings. He may use percentages (or proportions) to show the relative density of any one of the categories, and he may under certain conditions make inferences from a sample regarding the population percentages or proportions. If for each subject two different nominal measures are available, he may measure the association or correlation between these two characteristics in one of several ways. What we have called generalization of the event and generalization of relationship both may be made, provided other choices made by the research worker, such as his selection of a sample, permit them. However, the statistical procedures and consequently the calculation routines differ somewhat from those that might be employed with another type of scale.

[22] See Irving Lorge, "The Fundamental Nature of Measurement," *Educational Measurement,* (Edited by E. F. Lindquist), Washington, D.C.: American Council on Education, 1951, Chapter 14, for an extended discussion of scales. See also Frederic M. Lord, "Scaling," *Review of Educational Research* 24: 375-92; December 1954, for recent developments that are expanding our notion of the types of scales.

[23] See Julius R. Blum and Nicholas A. Fattu, "Non-parametric Methods," *Review of Educational Research* 24: 467-87; December 1954.

The point being emphasized here is that proper analyses of data depend upon the research worker's developing an internally consistent system of choices at a number of points in the investigation. The choices are related and influence each other. Good experimental design seeks to develop this internally consistent set of choices early enough in the investigation to permit the communication of findings that are relevant to the purpose of the investigation and of sufficient generality to be useful.

Analysis of Data

Four interrelated types of choices that the investigator must make in designing any study are:

1. A choice or specification of the population to be studied
2. A choice of a method of selecting the particulars that actually are to be examined or observed
3. A choice of a method of measurement, including the type of scale to be employed
4. A choice of the particular statistics, or characteristics of sets of data, that are to be examined.

Each of these choices influences the methods of analysis that should be employed. The statistical procedures that are appropriate for samples from finite populations differ from those that are appropriate for infinite populations. The procedures that may be employed with simple random samples from an infinite population to arrive at inferences differ from those that may be used with, say, systematic samples from finite populations. For either description or inference, the procedures to be used with scales that merely order the subjects differ from those to be used with scales that arrange the subjects along a continuum by the use of a constant interval. The statistical procedures appropriate for testing hypotheses about differences in a measure of central tendency, such as the mean, are not the same as those appropriate for testing hypotheses about differences in a measure of variation, such as the standard deviation. These choices, then, necessarily affect the analysis of the data. It is for this reason that the notion of design is of great importance in research. Good design means making these choices deliberately in advance of the actual gathering of the data so as to permit the analysis that will assist in answering the investigator's question or questions. Good design avoids certain problems of analysis by considering these problems and solving them in advance.

Descriptive Statistics

Two familiar types of analysis of data are often called the descriptive and the inferential. The descriptive type is in effect determined by specifying the population as finite (No. 1) and complete sampling as the method to be employed (No. 2). This type of analysis is then appropriate for any of the choices in No. 3 or in No. 4. For example, one might present the per cent of a specified population of students who fall in each of three categories: both parents foreign-born, one parent foreign-born, and neither parent foreign-born. The choice of per cent is the choice of a particular statistic, or characteristic, of a set of data, and is appropriate for any nominal, or category-type, scale that is used. This three-category scale might also be regarded as an ordinal scale, ordering these students with respect to a dimension defined roughly as contact with United States culture. If so, it would also be appropriate to summarize the data in terms of per cents.

On the assumption that Stanford-Binet IQ's form an equal-unit scale along a continuum from very bright to very dull, one might present mean IQ's for two groups of students. Here the choice of the scale is evident, and the mean, or average, is chosen as the statistic to be examined. Since the mean represents only one characteristic of a distribution, it would be well for the investigator to consider in advance whether or not he also would benefit from describing his groups in terms of variation or spread, which is quite a different characteristic of a distribution.

Other descriptive statistics are available. Correlation or association may be summarized in various ways, depending upon the form of the data and the type of scale that are used, for any two sets of data for the same set of subjects. Here the intent is to describe one or more relationships for this finite population. Graphical methods, such as those presented in most elementary texts on statistics, can be employed to give a picture of the findings. In general, descriptive statistics serve the useful purpose of summarizing when the number of cases (particulars) is too great to be readily encompassed without some aid. Descriptive statistics also single out and emphasize certain features, such as central tendency, variation, association and the like, of any set or sets of data.

Inferential Statistics

Inferential statistical procedures can be sorted into two types: survey or enumeration, and analysis. The former is linked to the

attempt to sample finite populations and to estimate the finite population values for such statistics as per cents, means and the like. The latter postulates that the population is infinite and attempts to generalize for this infinite population. This distinction is an important one for educational research workers to become familiar with. Its relevance can be suggested by an illustration from statistical procedures applied to manufacturing processes. It is common, in these processes, to inspect one or more lots of the article being produced; usually a sampling procedure is employed to reduce the cost of such inspection. The manufacturer is interested in knowing, for any lot, whether or not it meets certain specifications. By sampling from the lot, which is a finite population, and inspecting the sample, he can determine with a prearranged risk the average quality of the lot and thus decide whether or not it will be acceptable to a given customer. This is the enumeration problem. It attempts to infer for the finite population some characteristic, such as the per cent of acceptable items in the lot.

However, the manufacturer may also have a second problem. He may want to know whether or not the process for producing this product is "in control." Any given lot, which for the purpose of inspection was regarded as a finite population, is now regarded as, say, a "chunk" of a larger, infinite population—all the products produced by that process. Inferential procedures that are labeled "analysis" are required for answering this question about the process, as distinct from the question about the lot.

It seems evident that an educational process poses both these types of inferential questions. For a given, finite population of students we may wish to estimate some trait or characteristic; survey statistics, or the inferential procedures associated with enumeration, are appropriate here. For example, most school systems are properly concerned about various characteristics of the students, the teachers, the community in which the school is located, the materials available for instructional purposes, such as the books in the school libraries, and the like. Depending upon the size of the community and the school, a complete enumeration of any of these may not be practicable. If so, survey sampling techniques may be employed to estimate population values. These techniques are appropriate for any study of a finite population which is not sampled completely, and their great utility is in providing information that is accurate within prearranged limits at relatively little cost or effort.

The question about the process, however, is also an important question in educational research. Here the intent is to develop a larger

generalization, such as a generalization about the relative effectiveness of different teaching procedures; we might, for example, compare the word-meaning-plus-phonics with a word-meaning-alone method of teaching reading in the first grade. Our interest now would be in a population larger than the finite population of a particular school or particular set of classrooms, and we would have to plan the study so that it would be reasonable to apply the methods of analysis to the data. Our earlier comments about the problems introduced by cluster samples are relevant here and serve to make this design problem even more complex.

This is probably a proper—though frustrating—note on which to end our comments about the analysis of data. We stated at the outset that this chapter would not be a "do-it-yourself" manual. Instead, we have attempted to show the large outlines of the problem-solving process in research and at least to alert the reader to major questions that arise and types of choices that are open to him. This restriction of purpose applies most forcefully to this section of analysis. Formulas and computation methods are inappropriate here because better explanations are available in the usual sources, to some of which we have directed the reader's attention. If the reader is able, from the discussion given in this chapter, to identify the main procedures in research and to recognize some of the decisions or choices he must make, he will have a basis for handling data. Further reading and discussion with others interested in and concerned about research for curriculum improvement probably will be necessary if he is to handle his data in ways that will communicate most accurately and most effectively.

Again we state that we would like to see every teacher able to make systematic observations of important factors in the teaching-learning situation of his classroom, to organize and analyze the data of these observations and to arrive at conclusions about relationships among these factors which will be dependable enough to improve his future teaching and, if possible, the teaching of others. As we have tried to suggest, there are virtually no limits on the care and intelligence that can be brought to these tasks. It also is true that most of us can, with effort, find a comfortable place located somewhere between complete naïveté and complete sophistication (whatever that may be in this period of rapid statistical developments) with respect to these problems where we can work and make real contributions to the problem of curriculum development.

Chapter Six

Getting Meaning from Research

CLIFFORD S. BEBELL

GETTING MEANING from one's study and experimentation is a challenge as thorny as it is universal. The school child wonders about a sentence he reads, the housewife studies the sky to see whether she should hang out her wash, the preacher asks his congregation to reflect on the meaning of their lives and the teacher tries to interpret test results.

Miss Bishop carries out an experiment with her fifth grade class. Her evidence seems to indicate that students learn problem-solving skills more effectively when they have opportunities to plan their own work. She finds this conclusion to be supported both by the opinions of teachers whose judgment she respects, and by what she reads in the literature. Still, she wonders whether her findings are truly valid, or whether she has merely organized her hopes.

A special teachers committee of Jefferson High School has studied the problem of reporting to parents. Its members develop a proposed report card to fit the needs of the school and the community. However, they have their doubts. In spite of the evidence they have gathered through reading, personal experience, interviews and tryouts, they still wonder whether the procedure they propose to their colleagues is the best one to use.

In both the foregoing examples the persons involved have faced the problem of deciding how much confidence they can place in the results of their study and research. Do their data answer their questions? Are the answers truly dependable? Intellectually, they are looking for the evidence or analysis which will confirm their beliefs. Emotionally, they seek ways to increase confidence in their conclusions and turn their beliefs into convictions.

The search for meaning is both intellectual and emotional. We all recognize the intellectual challenge to collect appropriate and reliable

evidence and to discover helpful relationships that will support a particular idea or belief. The more data and experience which can be found to bolster a concept, the more we incline to its acceptance.

All of us also recognize an emotional element in our drive to discover meaning. We want proof—the assurance that our beliefs mean what we hope they mean. This drive is easily observed in such commonplace instances as the man studying the stock market quotations, or the sports fan poring over baseball statistics. We have all suffered at times from inner conflict when our convictions seem contradicted by the evidence, and our intellect and emotions urge us in different directions. The purpose of this chapter is to consider ways in which researchers, particularly teacher-researchers, can get meaning from their investigations. Both the intellectual and the emotional side of the challenge will be taken into account.

A School Situation

The increasing emphasis upon action research in education makes it imperative that principles or proposals be practical and helpful in actuality. For this reason, much of the discussion in this chapter will be related to a specific school problem. Although both the research and the situation are hypothetical, they are held to be typical of the circumstances commonly found in the public schools.

Franklin Elementary School comprises a student body of 565 boys and girls and a faculty of 18 teachers. The school is housed in a building constructed three years ago. Like the building, the community and the curriculum also possess signs of recent change. The school is part of the system in a city of almost half a million inhabitants, located in the heart of America. The area served by the school once constituted one of the more desirable neighborhoods in which to live, as is attested by the many old mansions still standing. Most of these houses have been converted to rooming houses, however, and the neighborhood shows signs of economic deterioration.

Franklin School's program represents a compromise between the past and the present. The children remain in one classroom with the same teacher for the larger part of the day. At this time, the work in arithmetic, social studies, science, reading and language is done. However, the school has special teachers for art, music and physical education from the third grade on.

Recently, the principal and several of the teachers have become interested in using the parent-teacher interview as a supplement to the present report card in telling parents about their children's

progress. Many of the teachers are frankly skeptical of this activity, especially in terms of the amount of time it requires. However, all teachers have participated in several meetings in which parent-teacher interviews have been discussed. The reactions of the parents who have participated in interviews are somewhat mixed, ranging from the enthusiastic to the openly critical. Those who like the interview mention specifically such benefits as additional information, the opportunity to ask questions, and the friendly atmosphere. Those opposed say that it is hard to get a straightforward answer to questions, that they are told many things they already know, and that the teachers give them advice about things which are more properly the business of the parents and family.

At a recent faculty meeting the issue came to a head. As a means of resolving differences of opinion the coordinator of instruction proposed that one or more studies be undertaken. In this way evidence might be gathered which would answer the more pressing questions. Several teachers agreed to work with the coordinator in planning and carrying out appropriate investigations. This group met and proposed the following questions and studies:

Question 1: How can one determine whether or not an interview is successful?

Method of Attack: The group decided to interview the teachers and a cross-section of parents. Group members wanted the ideas of these people as to what kind of information should be transmitted between school and parent and what kind of interview might succeed in accomplishing this. They planned that the parents selected should include some of those who were opposed to the interview technique, some who were in favor, and some who had not previously expressed an opinion. The group's plan also included a review of the literature to determine the characteristics of a good interview, as proposed by professional writers or reported from studies elsewhere. They then intended to combine the information from the teachers, the parents and the literature into a set of criteria to be used in evaluating interviews at Franklin School.

Question 2: To what extent does the success of an interview depend upon the amount and kind of preparation the teacher makes for it? What information should he gather for use in the interview? Should he plan to cover the ground from his own point of view or from that of the parent or child?

Method of Attack: Each teacher in the group decided to make an inventory of his own practices in preparing for and structuring an interview. The coordinator undertook to obtain similar information from teachers who might volunteer to furnish it. All teachers so involved would also get ratings on the effectiveness of at least some of their interviews from themselves and the parents, if possible. The practices of each individual would

be compared with recommendations from the literature. Also, the practices of the various persons involved would be related to the effectiveness of their results in order to locate significant factors influencing the success of an interview.

Question 3: Are interviews more successful in dealing with students with personal or emotional problems rather than with those whose progress in school is normal?

Method of Attack: Two teachers volunteered to concentrate on this problem. They decided to select two sets of students for study. One set was to include students who at least two members of the faculty agreed were children with personal or emotional problems. The other set was to consist of boys and girls whom at least two staff members agreed were average or "normal." The two teachers decided to gather information about their interviews with the parents of the students who were thus selected. This information was to include ratings on the effectiveness of the interviews by the teacher and the parents, if the latter were willing. It was also to include as much information as possible about the student, his parents and his home circumstances. The data were to be studied to see if any difference existed in the effectiveness of the interviews dealing with the two groups of students. If any difference existed, the additional information was to be examined to determine if other differences occurred which might explain the change in the effectiveness of the interviews.

Greater Meaning Through Planning

The prime requisite for meaningful results is careful planning. Too often even mature and experienced researchers find themselves at a loss to interpret data because they did not give sufficient thought in advance to their reasons for gathering the data.

Many persons are discouraged by all the questions which can be raised regarding the meaning and validity of their data or beliefs. They feel that such questions introduce technical or philosophic problems with which they do not possess the time, motivation or experience to deal. Such a feeling is one of the principal causes, if not the main reason, for teachers' reluctance to call their efforts research.

The important thing with regard to any particular investigation, however, is not so much to spend time and energy worrying about its excellence as it is to get something done. Doubtless, many methods used to validate beliefs are not as good as they might be. Yet it is better to make even an incomplete or inadequate attempt to obtain meaningful findings than it is to say it is impossible to do anything. The amount of confidence which is accorded a belief may depend upon the care with which an investigation is carried out, and yet even

a weak contribution to our understanding is better than none. Some of the suggestions given below relative to improved planning are illustrative of some of the informal things which can be done.

Definition of the Problem

An important part of the task of getting meaning relates to stating issues and questions in such a way as to obtain some general and common understanding of what is being proposed. We all know how subjective and variable is the language of education. It is not easy to phrase a problem or to define words so as to get widespread agreement or understanding. Yet, adequate definition is a necessity if meaning is to be achieved.

The job of problem identification is thoroughly discussed in Chapter Three, and there is no intention to duplicate or repeat at this time what is dealt with elsewhere. The methods presented there for getting agreement and understanding among those involved in a piece of research constitute ways of gaining increased meaning. To them can be added some proposals relevant to making problem definition as meaningful as possible to those who have not been actively involved in its identification.

1. It is often possible to find a definition held widely by writers in the literature. Failing this, one usually can locate at least some areas of agreement. For example, it is possible to find that all or almost all writers are in concurrence with some of the elements of a concept. The Franklin teachers who go to the literature to determine the meaning of "effectiveness" will encounter such a situation. They will find no universal definition of "effectiveness," but they will find that there will be widespread agreement on at least some of the characteristics of an effective interview.

Perhaps one procedure which should be avoided is that of using the *Dictionary of Education*, or some similar source, too freely. Investigators often assume that, because they formulate a definition in the exact language of the dictionary, they have found an acceptable way of expressing themselves. Usually, the dictionary definition only approximates professional consensus, and the researcher must still determine whether it actually expresses a meaning which is appropriate to his problem, is acceptable to him, is reflected in his own practices and is understood by those to whom he is communicating. Often, agreement on a word is at a verbal level only, and does not represent a sharing of concepts based upon actual experience or practice.

2. The reaction of a number of colleagues to the statement of a problem can be sought by the researcher. Specifically, he can get their interpretation of it in their own words. Often, a second person, attempting to describe his understanding of a statement, will use ideas which were not in the mind of the original framer of the statement. If a number of people agree regarding the explicit meaning of a problem, and particularly its meaning in terms of applications, the researcher can be reasonably certain that he has avoided problems of communication.

A reference to the previously described efforts of the Franklin School researchers to define "effectiveness" will illustrate this approach. They sought through interviews to obtain from a number of different persons the concepts these persons had in mind and the words they used to express those concepts. Only after a fairly thorough survey of this kind can a meaningful definition be developed for a controversial idea.

3. A formal way in which an appeal can be made to the judgment of others is through use of the so-called jury of experts. This approach involves an attempt to get reactions from a number of persons of experience and insight to the controversial elements involved in definition. Their responses can indicate to the investigator those of his ideas with which authorities are in agreement. He can then amend or rephrase his statements accordingly.

None of the studies proposed by the Franklin School researchers suggested the use of a jury of experts. However, such an approach could easily have been included. For instance, they could have returned to the faculty and parents after they had developed criteria for rating the effectiveness of interviews. The persons thus contacted could then have a had a chance to react to the various concepts included in the final definition. In this way every individual could express his opinion on every element, whereas in the original interviews each person commented only upon the ideas that he thought of or that were advanced by the interviewer.

The use of any of the foregoing suggestions is appropriate whether the problem of definition is one of pinning down the precise meaning of words or one of specifying the nature of the problem itself. Both concerns are important, and it is a first step toward insuring meaningful results to make certain that both the terms used and the problem itself are seen in the same way by the investigator and by those who might use his findings.

Delimitation of the Problem

A common fault of those who wish to investigate educational questions is that they want too definite and too positive an answer to too broad a problem. This is not unnatural, since it is the broad problems which are the important problems, and which concern us most. However, we would do well to recall the old maxim that a man must learn to walk before he can run. It is unfortunate that the motivation an individual has for obtaining answers to questions usually increases as the likelihood that he will actually get those answers decreases.

If researchers wish to increase the likelihood of obtaining meaningful answers to their questions, they should try to make those questions reasonable in their scope. The group at Franklin began to do this when it limited its questions to specific ones about the influence of the type of preparation or kind of student upon the effectiveness of the interviews. Such questions were less important than the teachers' real concerns about the extent to which the interview approach contributes to the learning of the students. However, there are usually simpler questions which must be dealt with before the more important ones, and these are likelier to result in meaningful findings.

Some ways in which delimiting a problem can be attempted are as follows:

1. It is possible to narrow the problem down to only a piece of the original concern or question by asking oneself, "What do I have to find out *first* in order that I may discover the important things with which I am really concerned?" For example, a researcher must learn a lot about the conditions existing in a given situation before he can begin to speculate about the interrelations of the various conditions. Likewise, one must be aware of the conditions and the relationships which are pertinent to a particular problem in order to make intelligent decisions regarding it. A study designed to determine what decisions should be made regarding a given situation will yield results of doubtful validity unless the simpler problems involved have first been attacked.

Previous discussion has shown that the researchers at Franklin School settled for first things first. Knowledge about the characteristics of a successful interview must precede understanding of how the interview is related to students' learning. Awareness of the influence of various preparations upon the effectiveness of the interview is a prerequisite for making wise decisions about using the teacher-parent interview in a school program.

2. Those who seek a high degree of validity in their findings should limit themselves largely to studies of a descriptive nature, or to questions dealing with fairly simple relationships. This is an extension of the preceding suggestion. Education as a science is in a rudimentary stage of development, and as in all sciences at such a level, the principal task confronting researchers is one of describing adequately existing conditions and phenomena. Descriptive studies can lead to better definitions of terms and can furnish data from which might emerge new theories and insights. Studies of this kind offer the greatest likelihood of valid conclusions.

The teachers at Franklin are of course interested primarily in the improvement of practices in their own school, and only secondarily in the large-scale and long-range needs of education. However, what is true of education generally is also true for specific educational situations. An adequate survey of existing practices and opinions at Franklin is a necessary preliminary to discovering what is the cause or effect of anything else and to proposing things to do.

3. It is important to specify carefully and in detail the situation in which the study is to be undertaken. A point can be proved more easily in connection with one individual or one situation than it can be with regard to many. The individual who seeks greatest validity in the results of his investigation should try to relate his study as closely as possible to a particular situation or a particular kind of situation.

The study at Franklin is intended for use at Franklin. Consequently, the situation in which the study is undertaken and that in which the findings are to be applied are similar. The planning group members themselves recognized that the effectiveness of the interview might vary according to change in the circumstances of its use. This was evidenced in their study of the relation of interview effectiveness to the kind of student involved. Other ways in which conditions affect interview effectiveness were not considered. Yet a moment's reflection reveals that what constitutes a true principle regarding interview effectiveness for one teacher at Franklin might vary for other teachers or other schools. In order to be meaningful a belief must be related to a well-defined kind of situation.

Some people feel that delimitation often smacks of cutting out the heart of a problem. Perhaps one of the most difficult exercises in self-control confronting educational researchers is lowering their sights from purposes which seem very important and very desirable to others which seem almost mundane and picayune. However, the

past experience of mankind regarding the growth of understanding in any area through research indicates that success comes only through such a process. Conscientious delimitation of a problem is perhaps as important to a researcher seeking to increase the likelihood of valid results as anything else he might do.

Planning a Research Study

The plan for a piece of research grows out of the problem which has been identified, and presumably is in harmony with its definition and delimitation. The plan represents a proposed way of gathering evidence which will answer the questions posed in the problem statement in as meaningful a fashion as possible. The way in which a plan is developed and organized may be quite technical and complex, and many teacher-researchers are afraid of getting involved in areas that they consider too difficult or time-consuming. There are many aspects to planning a study which depend more upon conscientiousness than any particular skill or understanding. It is with such as these that the present discussion is concerned.

1. The research plan should contemplate getting as much accurate descriptive information as possible about the situation in which the investigation is to take place. Many errors have been made in educational research by attempting to extend the conclusions of a study to situations completely different from those out of which the findings emerged. This is particularly the case when other individuals than the researcher will be using the results and often occurs because adequate information about the original situation is lacking.

The various characteristics of the situation, data about the individuals in it, as well as about the conditions, both physical and intangible, associated with it, all form part of the information necessary for making good applications. The more the teachers at Franklin know about the circumstances and background attendant upon an interview, the better they will be able to theorize as to what influences its effectiveness. They will also be able to determine more confidently the extent to which their ideas will be applicable under varying conditions.

Even devices and instruments which are not very good can be helpful. Unreliable data may be better than no data. One must only remember that the meaning of unreliable data is more uncertain than it would be if the information had been more carefully collected. The investigator will find, though, that meaning is added to the results of a study if he collects as much descriptive evidence and information as possible.

2. Planning to conduct a study under a variety of different circumstances will increase the likelihood of valid results. Through such means an attempt can be made to find out if the theory being investigated is as applicable to one situation as it is to another. Accurate description of the conditions existing in each specific case is not so important when several instances are available as it would be when there is only one. This is because an assortment of situations is likely to possess a variety of characteristics which will tend to balance out the influence of various factors. If a finding holds true in a number of instances, it is reasonable to assume that it will be applicable to many others. If the researchers at Franklin discover that all the teachers have more success with the interview if they have their records available, then there is more reason to believe that this method is desirable generally for different teachers in various situations.

3. Improved data-gathering procedures can increase the likelihood of meaningful findings. This suggestion may be disturbing to those who feel that the various procedures for collecting information are too technical and arduous for them. However, everyone is capable of improving a skill without having to become an expert.

There are several ways in which the planning and procedures for collecting information can be made more effective. One is to work cooperatively with other persons in the same situation, so that the activities will reflect the judgment of several persons rather than one. This approach will tend generally to cancel out the misconceptions and inaccurate ideas of any one individual, although this is not always the case, and one should guard against the possible pooling of ignorance.

A second method might be through reading up on ways to use a particular data-gathering procedure. For most techniques there are comparatively simple references giving a few characteristics or criteria governing the effective use of each. These criteria are not always easily applied, but they do constitute a guide to correct action and a safeguard against bad mistakes. A group of people working cooperatively ought to be able to profit from suggestions from the literature.

Before the researchers at Franklin do any interviewing of teachers or parents they should read a reference or two on what constitutes a good way to proceed, and should agree upon a plan or schedule to follow. Each person might even practice on one or two people and share his experiences with the others. In this way the plans laid down for collecting data would furnish the greatest possibility for getting meaningful answers to questions.

A third way of improving data-gathering procedures is through in-service training. This was already hinted at in the preceding paragraph. A study group might get together, with or without specialized assistance, to determine through trial and error the ways of collecting information which researchers who are also full-time professional educators can use effectively.

A fourth approach, and one which is often employed, is that of using a consultant or specialist. This procedure has not always been successful, and some people are rather skeptical about it. The consultant is most helpful when he concentrates on putting his resources at the disposal of the persons doing research. His job is to find out whether he possesses any specialized knowledge or skill which will help them do what they want to do. His function is not one of taking over and telling the others what they ought to do. However, he should be able to help them plan so as to avoid the pitfalls which might reduce the meaningfulness of their results.

4. Employing the best possible design for the study is another way to increase the probable validity of the findings. However, experimental design is a topic which can become very technical and complicated. Much time and attention have been given to it by specialists, and it is an area with an imposing amount of technical literature.

There is no way for a researcher to be certain in advance that his research plan will be truly functional. However, it is better to use even a poor plan than it is to begin an investigation with none. This is not to say that one should destroy the naturalness of a situation just to develop a formal design. Such an extreme is undesirable, and yet there is also little desirability in using a completely unplanned trial-and-error approach.

The methods of attack proposed in the various studies at Franklin School are certainly not highly developed, formal experimental designs. However, they will result in data which will have at least partial usefulness in connection with the questions which were asked, and they will do so without changing the naturalness of the school situation in any important way.

Getting Meaning From Data

To many people the crux of the problem of getting meaning from research is reached after the data have been gathered. The question then arises as to how to get the most from this material. For these persons the foregoing discussion relative to ways of increasing the meaningfuless of research through improved methods of planning is only

a preliminary. Although planning must be given a higher standing than this, there is no doubt that many crucial problems surround the task of getting meaning from the data collected in a research study.

Essentially these problems fall into two categories—those related to the meaningfulness of the data *as data* and those related to the meaningfulness of the data with respect to the part the data play in the total study. The first category refers to such well-known characteristics of data as validity and reliability. The second concerns such questions as the extent to which the data are pertinent to the original questions posed by the researchers, and the degree to which the data support any conclusions and generalizations made as a result of the study.

Validity

In spite of the widespread discussion of the term "validity" it is difficult to find agreement as to what the concept really means. It is particularly difficult to define it in a way which will be acceptable to both the theoretician and the person who must use the idea in practice. The definition which does occur is often on a very generalized basis and is far removed from specific problems. For this reason, teachers of research or measurement in colleges and universities usually find the concept of validity a difficult one to convey to students.

A common attempt at definition states that the degree of validity possessed by a belief is the extent to which that belief agrees with what actually exists in reality. Such a statement, however, is both oversimplified and overgeneralized. It certainly can founder on the knotty and perennial question of what is "reality." Further, it is so broad that it has little helpfulness as a guide to action. And yet, efforts to make a definition of validity more explicit often bog down in disagreements which prevent its consideration from reaching practical levels.

In practice, all validation seems to consist of efforts to obtain additional evidence from new sources to confirm ideas already in existence because of evidence previously collected. The most frequently discussed validation problem—that of validating the results of a measuring device—seems to corroborate the foregoing statement. The contents of a test are compared with contents of courses of study to determine the amount of agreement. The results obtained from the use of a newly constructed intelligence test are correlated with the results of the *Stanford-Binet*. Other validation efforts also seem to consist of comparisons—between ratings obtained from a jury of

experts and results from a measuring device, among scores obtained from various parts of an instrument in order to show its internal consistency.

The teachers at Franklin School will confront the problem of validating any estimates or other data they gather relative to the effectiveness of the teacher-parent interviews. They will have to answer the question, "To what extent do these indicators truly and dependably measure interview effectiveness?" To the degree that the researchers are able to answer this question to the satisfaction of all or most of those concerned, they have validated their measuring device and have obtained meaning from the data gathered.

Reliability

The teachers at Franklin School will have to face the question of reliability as well as validity. This question is at the same time both easier and more difficult than that of validation—easier in that the task of demonstrating reliability is a practical and technical job, rather than abstract and even philosophical as is so often the case with validation; and more difficult in that the techniques are sometimes more specialized or arduous than teachers wish to undertake.

The reliability of a device or procedure represents the extent to which the scores or other data it furnishes are stable. This is to say that a reliable data-gathering process is one which will yield the same results every time it is used under the same conditions. However, the impossibility of exactly duplicating conditions complicates the matter of demonstrating reliability. Many of the techniques used to deal with this difficulty are statistical in nature, and this fact further complicates the task of dealing with reliability in a local study.

Many practical people see little common-sense value in all the discussion of reliability. To them it represents a kind of manufactured concept which has little usefulness. The teacher who writes a final examination for his class may say that reliability is not a concern of his. After all, each time he wishes to examine his students he must construct a new test. Checking the reliability of each test unnecessarily complicates the matter, and he considers it a lot of extra work for little or no extra gain. He rejects the argument that the scores obtained by students on his examination might be somewhat capricious and would have varied if the test had been used under different circumstances. His reply is that it is as fair for one student as it is for another, and that the results of his examination usually agree quite closely with the judgments he had already made regarding the achievement of the various students in his class.

The foregoing line of argument is persuasive to many persons in education and is not to be rejected with a patronizing smile by the research specialist. This argument, like many arguments which are widely accepted, has more truth in it than the technical specialist is willing to admit. What position, then, can be taken relative to the problem of checking the reliability of data-gathering devices in practical situations?

The teachers at Franklin confront this problem. They propose to develop a scale for rating the effectiveness of an interview. They face the important problem of validating it. Do they also have to go through a number of steps designed to find out how stable are the ratings obtained from different applications of the rating scale? The following discussion will attempt to make proposals relative to this question at the same time that it considers possible validation practices.

Validation Practices

If validation consists of corroborating the beliefs drawn from one source with evidence obtained from another, the practical question confronting researchers centers around what particular comparison should be made in a given situation. This question has been much discussed, particularly in textbooks dealing with educational measurement. At this point, only a few of these comparisons will be reviewed, and the emphasis in discussing these will be upon the procedures which are most useful for educators studying problems in field situations.

1. The first thing to do is to make a careful evaluation of the procedures by which the data were obtained. These techniques should be compared with accepted criteria governing their use to determine their strengths and weaknesses. And weaknesses almost always exist in even the best procedures. Questionnaires have less than 100 per cent return, interviews are often loaded by the attitudes and desires of the interviewer, and measuring instruments are sometimes constructed in such a casual fashion that their results are clearly questionable.

There is nothing wrong with admitting weakness in the data-gathering instruments and procedures employed in a study. Frequently a researcher knows in advance that his devices are inadequate, but he is forced to use them because no others are available. Honest recognition of such deficiencies by a researcher will usually increase the confidence others have in his intellectual honesty and gain more acceptance for the conclusions he draws.

Careful checking of the methods by which a data-gathering process

was developed and carried out should be based upon generally accepted standards for that particular process. If there has been discussion among those involved in the research about the meaning of any such standards as are located, there is a better chance they will be used meaningfully than if each individual applies them separately. A data-gathering process which has been evaluated against a set of criteria has increased likelihood of being reliable, since unreliability is often the result of casual development and use of a device.

The teachers at Franklin should check the techniques they employ in interviewing faculty and parents against professionally accepted criteria of a good interview. This was suggested previously in relation to good planning. Probably it should also be considered when the researchers are trying to evaluate and interpret the data they have gathered. The Franklin researchers should also try to locate suggestions to help them phrase their criteria of interview effectiveness in the most helpful way possible. They should also check the form and contents of any rating scale they construct, as well as the ways they use the scale, against standards governing good rating scales.

Reliability is a necessary property of any device or procedure expected to yield valid results. Through such checking and evaluative activities as have just been suggested the likelihood of securing meaningful and valid data can be greatly increased.

2. As much use should be made of more formal methods of demonstrating reliability as seems desirable in the eyes of those carrying out a study. These methods usually involve some form of correlation of data obtained from one application of a device or process with data gathered by means of another application. Therefore, some of the discussion in the following sections of the various comparisons available for use as validation procedures will also apply at this time.

A correlation or comparison can range from the simple to the complex. A teacher can inspect the scores made by his students on the even items on his test and compare these visually with the scores obtained on the odd items. This casual comparison is a simple form of correlation, and might well serve to locate instances in which the two sets of scores possess little agreement. More generally a correlation coefficient or some other statistical formula is employed as a basis for making a more precise and careful comparison. However, even a rank-order correlation coefficient is quite useful, and this latter technique has the advantage of omitting much of the computation of the more technical methods.

Comparisons can be made under all kinds of circumstances. For example, the teachers at Franklin might wish to see if different persons

would rate the effectiveness of the same interview in the same way. Agreement between two or more observers of the same interview (assuming that it would be possible and desirable to observe one) would indicate that the scores obtained from the rating scale would be reasonably stable from one rater to another. Other comparisons could be made to see if there seemed to be variations in the ratings owing to such extraneous factors as the position of the items on the rating forms, the reversing of the scale arrangement on some items, or the circumstances under which the rater completes the form.

3. The most common and the easiest approach to validation is through inspection. This is often called the face validity approach, and an individual employing it maintains that a device is valid because it looks valid to him. This is the process used by teachers to justify the validity of their final examinations. They assume them to be valid because they constructed them to be so, because the contents of a test agree with what was taken up during the course. This is also, at least partially, the approach used by the publishers of standardized achievement tests when they make a careful analysis of the contents of a number of textbooks and syllabuses and make certain that the tests they produce agree in content with the materials examined. The test is then said to possess curricular validity.

The teachers at Franklin seem to anticipate that face validity is what they will rely upon in placing dependence upon the results of their scale for measuring the effectiveness of the teacher-parent interviews. They have attempted to strengthen their confidence in the contents of their scale by constructing it from the ideas of a number of teachers, parents and educational writers. However, at best it represents a consensus of what a number of persons think should constitute the contents of such a scale. This is still only an educated guess and probably requires additional evidence if the confidence in the validity of the results of the scale is to be increased very much.

There is an additional step which might be carried out, however, before the researchers actually resort to a comparison of the results of the scale with results obtained from some other data-gathering approach. The scale in its final form might be submitted to a number of persons for reaction. These individuals would be then considering both the contents and the form of the device. They could, for example, indicate if they had been quoted correctly. If the individuals included in the group reacting to the scale included some widely recognized specialists, the confidence would be increased considerably.

4. The validity of the results obtained from a data-gathering device or procedure can be checked by comparing these results with those

obtained from a different instrument or process designed to get evidence on the same characteristic. For example, each teacher-parent interview might be rated by the teacher relative to its effectiveness and might also be evaluated by the parent using his own words in response to a simple request. If the data obtained from these two sources tend to agree, then there is a strong presumption that both sources are furnishing valid data relative to the effectiveness of the interviews.

The comparisons which can be made are many. Data from one device can be compared with data from another as in the preceding illustration. Or data obtained from an instrument might be compared with the independent judgment of one or more persons. A common way to try to validate a measuring device which has been newly constructed is to find out if the results it gives agree with the judgment of a so-called jury of experts. A test on work habits would yield scores when administered to a number of students. A group of teachers who work closely with the same students might rate them on their work habits. A close agreement between the data from the two sources would tend to validate the test results.

Many problems are associated with getting meaning from data through the use of this kind of comparison. For one thing, there is the question of how close a comparison is necessary. The agreement is never perfect, and although partial agreement is better than none, it is often hard to know how to interpret partial agreement. Perhaps the only generalization which can be made about this point is that it should serve to increase the confidence with which findings are derived from the data.

The task of getting meaning from data by means of validating the data has barely been introduced in this section. However, there are methods which involve long-range study, and these will be discussed in a later section on getting meaning from findings and generalizations.

Drawing Conclusions and Making Generalizations

Assuming that the data have been evaluated in terms of validity and reliability, what can be done with the findings to answer questions and make generalizations? Sometimes investigators have been overconfident about both the validity of the data they have gathered and the ability of the data to support sweeping generalizations. It is necessary to make the best possible use of the information collected in an investigation to obtain valid conclusions and generalizations. There

is an extensive treatment of this problem in Chapter Five, and the only discussion which will be added here will be directed solely at how meaning is obtained from this process.

1. The first thing to do with evidence gathered in a study is to use it to answer certain questions about the specific situation under investigation. Before a researcher can generalize from his conclusions, he must have a very clear idea of what those conclusions are. Unless he can use the data to obtain fairly accurate answers to questions about the experimental situation itself, it is unreasonable to assume that he will be able to extend his findings to a wider field. An essential to drawing valid inferences from the outcomes of a study is to apply the data in the most direct and explicit fashion to the experimental situation itself.

The researchers at Franklin proposed to determine the kind of preparation needed to make a teacher-parent interview effective. A number of different teachers will keep a record of their own practices, and each will presumably decide what works best for him. His answer is meaningful for himself primarily, and yet before any more generalized meaning is possible, these specific and individual answers must first be obtained.

2. Generalizations should be made cautiously and tentatively. It is very easy to overgeneralize, and it has sometimes been said that the favorite exercise of some people is jumping to conclusions. All of us have a tendency at times to take ideas drawn from a very explicit situation and extend these too widely and incautiously. Needless to say, the wider the gap between the specific and the general the greater is the chance to make errors and lose meaning.

There are two prerequisites to legitimate generalization. The first is that the findings be acceptable in terms of the original situation, as has just been discussed. The second is that the areas into which generalization is made, or the situations in which application is anticipated, should bear a distinct and describable resemblance to the experimental situation. The researcher should be aware of the characteristics of the experimental situation, so that he can limit the extension of his findings to similar situations. This is why the earlier suggestion was made that the situation under study be carefully described.

This is also why action researchers often feel such confidence in their findings. A teacher discovering that a particular method is effective in his class this year will feel that the similarity between this year's and next year's classes will justify extending his conclusion to the latter. The study at Franklin School will lead to findings relative to the ex-

perimental situations which will not only satisfy the teachers as being meaningful for those specific situations, but will also be capable of legitimate extension to other teachers and other situations. There is danger in this extension as new elements enter in which might change the correctness of the findings. However, the new elements are few in number and the danger is less because the generalization has not been too widely extended.

3. Conclusions or generalizations should be compared with existing professional consensus. This can be done by finding out the extent to which the findings of a study agree with those of similar studies reported in the literature. It can also be attempted by asking colleagues for their reactions, or by using the jury-of-experts approach. The more extensive and unanimous the supporting opinions, the greater the likelihood the findings represent valid or meaningful principles.

The researcher who checks his findings in this way is trying to determine the extent to which those findings agree with the composite experience of at least a segment of the educational profession. It may, of course, be impossible for him to obtain this kind of corroboration. If such is the case, he must look for other ways to validate his results, some of which are discussed in the next section. However, if his conclusions and inferences do tend to confirm ideas already in existence, there is a strong implication that both his findings and the beliefs obtained from these other sources are valid.

Care in interpreting data is particularly important, since it is in this part of a research study that an investigator is most subject to the dangers of wishful thinking and lack of suspended judgment. Researchers, like all other people, tend to become emotionally identified with the fruits of their labor, and are tempted to see implications which are not completely justified. The extent to which an investigator resists the tendency to overgeneralize is the measure of the confidence he can legitimately feel in his results. It may also indicate the extent to which his findings will be acceptable and meaningful to other members of his profession.

Getting Meaning from Findings

The role of data in furnishing conclusions and generalizations has been discussed in the preceding section. However, the task of getting meaning from research does not end with such a step. The findings of a study gain probability and acceptance in terms of the data and opinions which support them. These findings are intended for use by

educators, though, and sooner or later their fullest meaning is seen through their implications and applications.

Application of the Findings of Research

Although the ultimate purpose of educational research is application, it is difficult to know where research ends and application begins. Since most investigations are devoted to discovering principles intended to guide educators' actions, the further testing of a belief through research often differs little from applying its findings in practice. Whether the testing be called research or application, however, it is this continued examination of an educational principle which determines its validity.

Every time a particular idea is tried out in practice the results add information to our total body of educational knowledge. Even the realization that a particular proposal does not work under certain circumstances adds to our store of information. Each teacher at Franklin who applies the proposals developed by the researchers adds more evidence which tends either to corroborate or contradict the findings of the study. The extent to which a belief is supported by an ever-growing body of experience is the extent to which it is valid and meaningful.

Several stages are involved in increasing the meaningfulness of a research finding through the method of continuing application.

1. The first step is one of developing adequate ways of informing people about the research finding. The traditional approach to this matter has been that of writing and circulating research results, using such media as books, monographs, theses, magazine articles, newsletters and committee reports. There has been some reason to doubt the efficacy of this way of using the written word, though, for rarely have such reports resulted in the actual application of the findings.

A more effective way of informing people is through involvement and participation. This is difficult to do on a large scale, but it is fairly easy in a specific school situation. The researchers at Franklin were the teachers who were participants in an on-going study, and who were, consequently, well informed about the study. However, the group was looking for ways to increase the number of people involved by asking others for their ideas.

The group approach to cooperative work on research has a counterpart in the typical in-service program of instructional improvement already in existence in many schools. Probably the same program can

serve both the function of research and of curriculum development. Indeed, a good case might be made for the statement that the two functions are virtually synonymous since both may examine existing conditions, make proposals and test them in an actual trial-and-error situation.

2. The second task confronting any persons who seek to validate beliefs through application is the job of motivation. Too often in the past have teachers been compelled to cooperate in a plan they did not agree with. Too often the assumption has been made that informing a person about the correct or desirable thing to do would fill him with a desire to do it.

The more a person knows about an idea from having participated in its study and development, the more he seems motivated to work with it. For this reason, there seems to be more likelihood of application of beliefs developed in a local study than of those developed in a research laboratory.

3. A third task involved in validating beliefs through their continuing use is that of adequate communication and records. Too frequently the conclusions of a teacher who tries out an idea in his own classroom tend to remain with this teacher. The pooling of the findings of a number of persons is an excellent way to increase the meaningfulness of all those findings. Here again is an argument for involvement and participation, which certainly encourage such intercommunication. However, this works well for the short run and specific school situation primarily. What might be done to increase the time span or geographical spread of such ideas?

The newsletter is often used, but it has the disadvantage of being ephemeral and of being largely a one-way method of communication. Indeed, most of the present methods of reporting and communicating research findings suffer from one or both of these shortcomings.

Perhaps a school or a school system might try to enlarge and revise its record keeping. In such a way not only would information be kept because it helps the school understand a student, but also information would be recorded relative to the experiences and findings of the members of the staff in working with important educational principles.

Empirical Methods of Investigation

In the preceding section mention was made of the difficulty in distinguishing between application of research findings and investigation of them in new studies. This is particularly true with the increasing

use of what can be called empirical methods of investigation, or in less formal language, trial and error.

Educators are continually trying out new ideas. They are perhaps not planning a formal experiment, nor do they propose to maintain any particular standards with regard to their evaluation and data-gathering. Nonetheless, they do try out new ideas and practices, and they attempt in some way to determine the effectiveness of these. This approach contains all the basic elements of a piece of research, even though these elements may be present only at a rudimentary level.

Generally, such empirical methods tend to be rather haphazard and casual. This is a matter of concern for the purist in research, who dislikes to see a procedure followed unless it is the one he considers to be the best theoretically possible. However, empirical practices represent the methods which are often actually employed and their usefulness must be examined.

Educational beliefs are investigated with many different degrees of ability, insight, conscientiousness and professional motivation. Individual differences occur among teachers and administrators as much as they do among other persons. Experiences and ideas will be appraised by them with various levels of insight. However, an agreement among many judgments obtained from different individuals in different situations is impressive, regardless of the excellence of any one person's procedure.

The teachers at Franklin School should be encouraged to use any of the ideas resulting from the study in any way they wish. They should be encouraged to collect information to check the validity of any of the findings the researchers obtained, or for that matter, any other beliefs that seem worthy of study. The body of conclusions the various teacher-investigators amass will represent an important addition to the understandings of the staff about the parent interview. In particular, any result arrived at separately by various teachers should be accepted as quite dependable and meaningful.

Validation by Research Methods

Validation of the findings of a study by means of research can be thought of as an extension of the empirical approach. It is an attempt to formalize and refine the informal methods of the latter through the inclusion of carefully planned and controlled designs for investigation, skillful and painstaking techniques of data gathering, and elaborate and scientific approaches to interpreting data.

There is no clear dividing line between empirical and research pro-

cedures. A teacher who teaches two sections of a course in American history, using in one a chronological structure and in the other a non-chronological organization, is approximating an experimental design. He is attempting to isolate an experimental factor, namely, the sequence of subject matter, in order to determine the effect of this factor upon the students' learning.

Even a teacher who substitutes a directed study period for the recitation method in the only algebra class he teaches may be approximating an experimental design. This would be the case if he made a systematic attempt to compare the class with which he is experimenting with other classes he has had in the past. If he finds his present class to be representative of former groups, he may attribute any changes in the learnings of the student to his experimental factor.

The more care and thought a researcher gives a problem, the more likely he is to get results in which he can have confidence. The staff at Franklin School might be encouraged to try some experiments, such as a teacher's using the interview with some parents and not with others. Any person attempting such a task should be given consultant help in planning his study and interpreting his data. If a number of such investigations are undertaken, the findings resulting from them should do much to increase the meaningfulness of all the ideas which emerge.

There is no such thing as the "method of research" which can be isolated and examined objectively. Like all other abstractions, it is a concept which can be approximated more closely under some circumstances than others. There are a number of criteria determining the elements of the experimental approach. In any given investigation some of these criteria will be at least partly fulfilled. In empirical methods, only a few will be met, and these only imperfectly. In more formal procedures, there will be an increase in both the number of criteria being applied, and the degree to which each is fulfilled.

Conditions Which Affect Meaning

The discussion in the preceding sections of this chapter has attempted to treat the problem of getting meaning from research through a practical, common-sense approach. The ideas and proposals considered earlier tend to imply certain principles and problems which can guide the thinking of an individual who wishes to examine a little more deeply the question of getting meaning. In particular, a reasonable extension of the ideas previously presented can lead to the question of how various conditions influence the concept of "meaning."

"Meaning" Involves Relationship or Comparison

An abstract discussion of the meaning of "meaning" is difficult to avoid at this point. It is easy to get involved in semantic and philosophic analysis, and in so doing to lose sight of the realistic considerations which are the main purpose of this chapter.

On the other hand, it is useful to have some agreement regarding the way in which we conceive of the term "meaning." What do we mean by "meaning"? The everyday illustrations of the child, the housewife, the preacher and the teacher at the outset of the chapter indicate that the word "meaning" signifies different things under different circumstances. What idea is common to all its uses?

The common idea is that of relationship. We get meaning from a fact or belief by relating it to some other concept which will help us to see it in perspective. A hit in a baseball game has significance which varies with the different stages in the game. A score on a test has meaning as we compare it with other scores or with some standard. An instance of behavior appropriate for the playground might well be unsuitable for the classroom.

To illustrate this point further, consider the research done in the case of Franklin School. One of the first concerns of the investigators was to find a way to determine the effectiveness of an interview. To do this they asked teachers and parents to state what they meant by the phrase "effectiveness of an interview."

The concept of relationship is illustrated in this instance in several ways. First, each respondent tried to give meaning to the word "effectiveness" by relating it to something else he considered to be important—getting answers to questions, planning for a student, developing a friendly atmosphere.

In addition, the group collecting responses was confronted with its own problem of getting meaning. What did the answers mean in relation to a useful set of criteria? How did the various ideas agree with one another and with those from other schools or the literature? How close a relationship would there likely be between what each respondent said his ideas were and what these really were in his private thoughts? In each instance, an effort was made to obtain meaning through relating one fact or idea to one or more facts or ideas.

No formal definition will be given in this chapter of the word "meaning," but the concept of relationship or comparison will underlie the discussion of how various kinds of data and beliefs acquire meaning.

Types of Data and Beliefs

The kinds of concepts which can acquire meaning run the entire range from single, simple physical facts to sweeping generalizations and theories. In this connection, a distinction is often made between a percept—that which is directly sensed by an individual through the use of one or more of his sensory organs—and a concept—an idea or thought generated by one's mind. However, such a distinction will not be made in the present discussion, and even immediately perceived data will be held to constitute a simple belief.

It is possible, however, to distinguish between different levels or types of belief. For example, a person might hold a belief about the nature of certain existing conditions. Illustrations of this would be a conviction that the world is round, or that the moon is a primary source of light, or that most high school teachers employ homework as an aid to instruction.

There may also be beliefs regarding the ways in which existing conditions are related, for instance, in such a relationship as that of cause and effect. An individual might theorize that a strict disciplining of students in school will cause them to become self-disciplined adults. ("Spare the rod and spoil the child.") Another individual might believe that grouping students in reading will lead to maximum learning on the part of each member of the class. Both generalizations relate to ways in which one condition or situation may be the cause of some other.

A third kind of conviction which can be held by individuals relates to what ought to be done to influence conditions. A person who says, "The schools in our community should concentrate on the fundamentals," is stating a deeply held belief as to what ought to be done. An administrator who says that the teachers in his schools must submit lesson plans regularly is also expressing his conviction. Principles such as these require validation. They usually grow out of evidence which is fragmentary and subjective at best, and are often based upon emotion rather than on reason. However, most decisions in education are made on just such beliefs, and it will be a long time before they are systematically and carefully validated.

Each of these three types of beliefs just described can grow out of personal experience, or can be based upon highly subjective information or misinformation, or can result from research studies. Regardless of source, they gain meaning and can be held with confidence only when they have been subjected to study. Beliefs regarding conditions can often be checked by observing the situation about which the

theory is held. Beliefs regarding relationships may often be tested by means of careful experimentation. Beliefs regarding decisions to be made are usually tried out empirically in the field. The more complex and general a proposition is, the more difficult will be the task of giving it meaning, and the more carefully its study should be planned.

Types of Relationships Within a Research Study

Since data and beliefs gain meaning through being seen in context with other ideas, a question arises as to what kinds of relationships and comparisons will lend most meaning to the data and findings of a research study. Consider the various steps or elements included in a piece of research, as follows:

1. Defining and delimiting the problem, and developing a statement of the problem
2. Developing and carrying out a plan for collecting data
3. Organizing, evaluating and recording the data
4. Interpreting and analyzing the data
5. Drawing conclusions, presenting findings and making generalizations.

There are at least three kinds of comparisons or relationships which can be described in terms of the foregoing list. The first consists of relating each stage of the study to appropriate criteria or standards to determine the adequacy of that stage. Careful application of such standards tends to give increased significance to each step of the study, and to make more likely the meaningfulness of subsequent steps. Criteria can be used to evaluate the statement of the problem, the methods for collecting data, the organization of the data and other parts of a study.

A second kind of comparison consists of finding a meaningful relationship between ideas present at different stages of a study. For example, the data which have been gathered need to be studied in relation to the questions or hypotheses included in the original formulation of the problem. Likewise, the findings or outcomes are meaningful only as they are firmly based upon the data which were collected.

Another method of getting meaning through comparison consists of studying the various ideas, beliefs and data related to a study using similar material gathered under other circumstances. This may include comparing the findings with those of other research, or comparing the data gathered in the study with data obtained from other

applications of the data-gathering devices, from the use of comparable devices, or with data collected in some other appropriate manner.

Meaningfulness Depends upon Similarity in Situations

Since almost all research is carried out in a limited number of situations, it is reasonable to inquire how applicable the findings are to other situations. If Mr. Smith investigates the usefulness of open-book examinations in the biology class, he does so for a specific class at a specific time. If he finds the method successful, as he defines success, he believes that he should be able to extend his conclusions to other biology classes in other years. He might still believe this even though he moves to another school and teaches in a new situation. He might even believe this if he is charged with the responsibility of teaching mathematics instead of biology. The further removed, however, his new situation is from the one in which the original investigation was made, the less confidence he will be able to place in his belief.

Educational principles which are applicable to a variety of different situations are particularly meaningful. Such principles are also exceedingly difficult to discover. Rare indeed is the generalization which can be applied with any measure of confidence under conditions considerably different from those which furnished the generalization in the first place.

Because of the difficulty of locating principles which are widely applicable, there is considerable interest in education today in doing research in such a way that the experimental situation will be similar to that in which the findings will be applied. This is the justification for action research carried out in the schools in which the findings of an investigation will be used under circumstances much like those present during the study. The researchers at Franklin School can be confident that the experience of a certain teacher with a particular approach to the parent interview will hold true the next time that teacher tries to do the same thing. For teachers at other levels with other emphases the same degree of meaningfulness does not exist.

Role of Language

It is one thing to attempt to find out the agreements or disagreements among the experiences of many persons regarding a particular concept. It is another thing to do this if each individual is interpreting the

language of the concept in his own fashion. Words mean different things to different people. A story told over the back fence by one neighbor to another, then repeated through the minds and words of many persons, may become completely changed from the original account. This illustrates the extent to which words used by an individual are interpreted by a second person to mean certain things, based upon his past experience, which may not have been in the mind of the first person. The more abstract and complex the ideas behind words, or the more emotional their connotation, the less likely are people to see the ideas behind them in the same way. The term "meaning" is a prime illustration of this difficulty. Even among professional thinkers it is possible to find different ways in which the word is defined.

Investigators often forget that language follows ideas rather than precedes them. All the words and terms used by people to communicate with one another grew out of concepts which had been previously developed, or experiences which had been lived through. The need to communicate certain common ideas led to the invention of words designed to convey those ideas. Consequently, it is necessary to remember that no word can mean anything unless a large segment of its users agree to a specific meaning. Often the job of getting meaning consists of finding out the widely accepted concept underlying the terms used, or else of phrasing an educational concept in a non-controversial way. Variation in interpretation of words should not become an active barrier to an expression of consensus or agreement as to the meaning of a concept.

Emotional Aspects of Meaning

At the beginning of this chapter mention was made of the emotional as well as the intellectual elements involved in the problem of getting meaning from data and beliefs. The preceding section considers some factors influencing the task of solving that problem intellectually. The present discussion will deal with emotional aspects of meaning.

Role of Emotion

At times a sense of certainty of the correctness of research findings is overwhelming. This is by no means proof of the correctness of those findings and indeed may well be a trap into which people can unwittingly fall. Often it seems to indicate a valid principle.

Certainty of this kind may result from agreement between the findings and the researcher's preconceived ideas or prejudices. In fact, there have been instances, although very few, of persons actually changing the data obtained in an investigation in order that the findings might bear out their original theories. Every researcher must examine his own emotions very closely when he feels this sense of sureness in order to determine that it does not spring from unexamined self-seeking emotions.

More frequently, the sense of sureness means that the findings are corroborated by the past experiences of the person or persons involved. Every human being is a storehouse of many experiences and observations. For the most part these are synthesized and generalized at a semiconscious level, and the memories themselves are stored at unconscious levels in the mind. However, when an explanation or theory organizes a great many such unrealized remembrances, the sense of certainty with regard to the correctness of the theory is sometimes impressive.

The researcher should not assume that this emotional response is bad. Instead, it may well be helpful, and it is certainly an inevitable human reaction. An occurrence of this kind means that the researcher is in effect considering himself to be a typical representative of those individuals for whom the belief might have validity. Although the logical or psychological explanation of this approach may be defective, experience seems to indicate that it often points to successful ideas. It certainly has the advantage that any application of a principle by a person with such a feeling is going to be based upon confidence and faith.

One factor which influences learning is that of faith or enthusiasm. A particular belief is most likely to result in profitable outcomes if people possess considerable confidence in that belief in advance. This statement may seem to lead to the paradox that successful results are dependent upon confidence, and confidence is dependent upon successful results.

To resolve this dilemma one must recognize the important role of emotion in the process of getting meaning. It does not matter which comes first, the chicken or the egg, just so both eggs and chickens are produced. Likewise, if enthusiastic educators can apply certain principles to obtain satisfactory outcomes, the end result is the development of meaningful educational principles which are shown to lead to successful results.

Conviction and Confidence Are Based in Emotion

There is no such thing in this life as certainty. Even the fact that the sun has risen every morning for thousands of years does not guarantee that it will do so every morning for the rest of time. Nonetheless, most persons possess a confidence in the sun's rising tomorrow which is very close to certainty.

There are other beliefs in which people have less assurance, such as the winner of next week's football game. The degree of confidence possessed in a particular belief can often be expressed numerically in a form which gives a probability that the belief is correct. A common way of doing this is seen in the odds quoted and accepted by those who wager on horse races or other sporting events.

Confidence can thus be seen to have both emotional and intellectual elements. Intellectually, it is based upon a kind of statistical procedure wherein the facts that support and fail to support a belief are balanced against one another to yield an estimate of the confidence which can be placed in that belief. Emotionally, it is the feeling that changes a belief into a conviction. What are the circumstances which bring this about?

Bases for Conviction

All confidence is relative. This is to say that we hold different beliefs with different degrees of certainty. The confidence an individual has that the sun will rise tomorrow is greater than his faith that he will live to see that sun rise. His conviction that he will be alive, however, is greater than his willingness to place reliance in the weather predictions. An English teacher who has attempted to increase his students' interest in poetry through the use of dramatic oral interpretations will have more confidence in the effectiveness of this method after he has been successful with it for many years than he had the first time he used it.

In trying to get meaning from research results, a person must recognize both the relativity with which he holds beliefs, and the circumstances which tend to increase confidence and build convictions.

Specificity. Specificity is one of the bases of certainty. The more nearly a concept is related to the evidence we can gather with our own senses, the greater is our feeling of security.

Universals are hard to come by. It is difficult to find beliefs of both widespread applicability and acceptance. Some persons might make

an exception of such a generalization as, "Eternal vigilance is the price of liberty." But the expression of this conviction in some forms of action leads to bitter controversy because of differences in the way terms may be defined.

There is the story of the preacher who exhorted his congregation to avoid such evils as gambling, drinking and idleness. His remarks evoked a series of fervent amens from one of his oldest parishioners. However, when he got around to the evils of snuff-dipping, one saintly woman stamped out of church indignantly remarking, "He's stopped preaching and started meddling."

The foregoing illustration indicates both the emotionality involved in convictions and the difficulty of relating a specific situation to a generalization. Faculty meetings are often characterized by sweetness and light as long as generalities are being discussed, only to break down into controversy over particulars.

The challenge confronting researchers today is one of finding ways to express general principles in such form that they will be firmly based upon experience, and can be believed in the same way that a person believes what he sees. The meaningfulness of research findings and the amount of confidence which can be placed in them relate to the extent to which they refer to specific situations or problems.

Consensus. Agreement with others seems to form a basis for an individual's convictions. We are all aware of the feeling of uncertainty which arises when one seems to be the only person in a group holding a particular belief.

Perhaps this basis for confidence springs more out of personality needs than it does out of unconscious recognition of meaningfulness. However, there is also the possible explanation that it grows out of our strong democratic feeling that the composite judgment of many people is the nearest approach to wisdom that we currently possess.

The Stanford-Binet test of intelligence can serve as an illustration of the role of mass experience. In spite of the elaborate and excellent procedures employed to validate this instrument, there is little doubt but that it was originally received by the educational profession with considerable hesitancy and tentativeness. Remember the old quip to the effect that "intelligence is that which is measured by intelligence tests"? However, the test has been used by thousands of workers in education and psychology, and the results yielded by it have quite consistently been in harmony with the judgments of those who have used it. At present, the *feeling* is strong that the validity of this measuring device has been proved by a long-time agreement between its results and the experiences of many people.

A frequent procedure on the part of those seeking to validate beliefs is to make an appeal to professional judgment. Often an attempt is made, through interviews, questionnaires, ratings and the like, to find out whether the opinions and views held by a number of persons support a particular generalization. The main endeavor in such cases is to find out whether the informal evidence possessed by many people tends to corroborate a principle under examination. The evidence may be unscientific, haphazard and highly subjective. However, it does represent a huge reservoir of information which is deemed to furnish a possible basis for conviction.

Many research studies are cooperatively planned and carried out. As several educators work together on the same problem, they are often able to cancel out one another's inefficiency or lack of ability or insight. Further, they usually relate a question to a number of situations, with the result that their findings are more nearly representative of education generally than would be the case if only one person and one set of conditions were involved.

The road to certainty leads through the minds and experiences of many individuals. Although the data collected informally by human beings in the course of their living is casually or even unconsciously treated, the sum total of all this information is constantly being applied to ideas and beliefs. It is important to recognize that this information will be so used, and to marshal its use rather than ignore it or try to explain it away. No matter how often it was repeated to the populace that the emperor's new suit was made of the finest cloth available, the evidence of their own eyes eventually persuaded his people that he had no clothes on.

Getting Meaning Is a Continuous Process

The problems of human behavior are much more complex than those related to inanimate objects. It is easier to predict the future movement of the stars than it is to predict the future movement of a group of junior high school students. The relationship between cause and effect is better understood in the natural sciences than it is in social situations.

There is a further complication in the field of education in that the goals sought by the schools will vary from time to time or from place to place. There have been many changes in the goals of Russian education during the past 40 years in accordance with shifts in the ideology of that country. The objectives of an American public school change from time to time, in quite a different manner, to keep pace

with new circumstances arising in the community or the society served by the school.

Because of the complexity of human beings and the changeability of educational objectives, it is difficult to visualize any immutable principles in education. The schools of the United States have seen great variation in their student population during the past half century. An increase in the number of students of average and below-average intellectual ability and students with vocational aims which do not include college has caused public school educators to plan new programs. Methods and structures which might have been appropriate for education of the so-called *élite* have to be completely re-examined in terms of the requirements of schools serving *all* the children and youth of this country.

A third grade teacher may find that her children do not need instruction in the basic habits of cleanliness and good health because of the standards maintained in their homes. Twenty years later the same situation may not exist. If the character of the neighborhood has changed and families with different understandings and habits now live there, the teacher will certainly need to re-examine the validity of her earlier ideas.

Achieving meaningfulness is a never-ending process. Since all convictions held in education are subject to elements of uncertainty at best, the impact of changing circumstances can serve only to diminish the confidence with which they are held. Every educational belief must be re-examined from time to time to determine its meaning under new and possibly changed circumstances.

Research forms a way of building a body of experience under many different and constantly changing conditions. It will enable us to gather new evidence and to gain meaning and confidence from that evidence. Educators will possess an increasing ability to influence what will happen to children in the future by a careful examination of what is happening to them today.

Section 3

The Researcher as a Person

THE RESEARCHER himself is a human being, working with other human beings. Anyone who undertakes research in which people are the focus must, of course, cope with this fact. The two chapters presented here deal with this theme. Mooney confronts us with ourselves as researchers—as producers of wisdom, not merely as consumers of the wisdom of others. Miles suggests a number of ways for us to avoid creating misunderstandings in the process of cooperative curriculum research.

Chapter Seven

The Researcher Himself

ROSS L. MOONEY

RESEARCH HAS AN inner and an outer drama. This chapter has to do with the inner drama—the researcher's intimate experience with himself during his research activity. This is not the usual view of research since most of us are in a position to see the general products of research and science but not the inner workings of a research producer, addressing himself to his task.

The situation in this regard may be likened to that which confronts most of us in seeing a play. As a member of the audience, we need only see an actor within the construction of the role taken. An actor who is watching another actor, however, will look behind the role taken into the role-taking, i.e., into the way the man who is acting is handling himself in the doing of his job. The seasoned actor knows that a critical element in what happens is the way the man handles himself. This is the inner drama behind the scenes and the one that neither actors nor research producers have made public in any great degree.

Lack of public knowledge of the inner drama has its effect in educational research when teachers and students of education who have not done research face the prospect of doing research themselves. In the absence of immediate experience in production, they use such experience as is available to them to construe what they think research involves. This experience typically consists of considerable reading of textbook science, perhaps a few research reports, and a gleaning of impressions about science, scientists and research, taken from the general culture in which we live. Out of these, teachers and others deduce what they take to be the proper attitudes of a research producer. Unfortunately, what gets built out of these bits and pieces is inappropriate for guiding the beginner into fruitful research production and is often quite the opposite of what needs to be if a researcher

is to achieve quality in his product and freedom of mind and spirit in his doing of research.

I am convinced that the greatest hindrance to the sound development of educational research is our too frequent failure to take into account the difference between a consumer's and a producer's orientation to research, leaving the beginning producer with a mental set which puts the emphasis at the wrong places and leaves the producer without thoughful guidance on problems connected with the handling of himself in his work. As a consequence, the beginner works under strain, derives little satisfaction for himself and precious little for society. He soon becomes discouraged and joins the hundreds of his predecessors who, having tried research once, vow they will never touch it again. Many capable persons, sensing artificiality, never even start.

This is not only a loss to education and the general welfare, but a loss, as well, to individuals who would have a more stimulating life if they could. Research is a personal venture which, quite aside from its social benefits, is worth doing for its direct contribution to one's own self-realization. It can be taken as a way of meeting life with the maximum of stops open to get out of experience its most poignant significance, its most full-throated song. I would wish for beginners the personal joys I know can come to them.

What I have done here, in an effort to help the beginner, is to show, first, the kind of thinking which many beginners come to when drawing on their bits and pieces of experience to date, and, second, the kind of thinking which proves to be much more appropriate and useful to the experienced producer, as I have come to realize it. The first is labeled "a consumer's point of view," and the second, "a producer's point of view." After "a consumer's point of view" is presented, I point to its sources of support in our cultural heritage and to its effects on the producer who tries to use it. Then the shift is made to "a producer's point of view," showing what is meant in this context, why such a perspective offers hope and what it means to a researcher who enters curriculum research.

The style of writing is not typical of research papers. Since the center of the theme, content-wise, is the giving of one's self into the research undertaking, it has made sense to try a presentation which, in the very act of the reader's reading, would ask of him, too, that he give himself to this undertaking. To this end, long passages are marked by quotation to signify that they are to be taken by the reader much as he would take long passages in a play, i.e., to show the inner workings of a mind, organizing experience from its particular point of view.

By identifying himself with these different points of view, the reader may be enabled, we hope, to invest himself sufficiently with "as if" possibilities to be challenged in his feeling and thought to the composition of his own point of view.

A Consumer's Point of View

The following passages are written as if on the inside of a person who, to date, has been a consumer of science and research in the popular vein and who now is trying to use what has already come into his experience to think his way toward the doing of research himself. He is trying to arrive at attitudes which he feels are important in keeping him on the right track:

"Research reports are written in the third person; personal reference to the researcher is left out. This must mean that it is taboo for a researcher to include himself in the research process. Therefore, in doing research, *I am to be quite impersonal, to leave myself out.*

"Research reports are written as though the events observed would have occurred had not the researcher been involved in making the observation, e.g., 'water runs downhill.' This phrase points to something that goes on between water and hills that is independent of the observer's experience of it. The truth science is after is something that exists regardless of man's experience of it. Therefore, *I am to look for truths which exist on their own account, independent of me.*

"If my research is to report on truths which are independent of me, then I must not participate in the events from which my judgments of truth come. If I would do so, I would influence the results and I would no longer be able to tell what relations would have been among the phenomena on their own account. This destroys the possibility of fundamental discoveries. Therefore, I am to watch what happens but I am not personally to take part in what happens. In other words, *I am to observe, but not to participate.*

"Centering on the truth, the scientist tells what happens whether he likes it or not. The researcher's personal likes and dislikes have nothing to do with science. The language of science is descriptive and expository; it is not sentimental. A person's sentiments can interfere because people tend to see what they want to see. It would be better if the researcher had no desires or sentiments at all. 'Value' is the big word here; *I am not to be influenced by what I value.*

"When a scientist reports that 'water runs downhill,' he is expressing a truth; he is saying nothing at all about whether it is good or bad that water so behaves. If, after a truth is expressed, it is used to do

good, then this action is all right, but it is not science any more; it is something else. *As a scientist, I am not to be concerned with what is 'good,' only with what is 'true.'*

"A research report presents the data and then the data reveal the answer to the problem. The researcher does not dictate *his* conclusion; he lets the *data* dictate the conclusion. Clearly, *I am to let the findings speak for themselves.*

"Research is written so that someone can do what the researcher did and find out for himself what happens. This requires a language of clear explanation, describing demonstrable conditions and events, with thought connections made logically. The researcher's feelings have no place in such expositions because feelings are fleeting and they are private, hidden in the unobservable inside of a person. What occurs in the researcher's imagination is also wholly irrelevant since it, too, is within the privacy of a researcher's inner regions. Only as feelings and imagined forms become concrete through transformation into observable acts may they enter into science, and when they are transformed, they are no longer feelings and imaginings; they are demonstrable and testable. *I am to depend on logic and testable demonstration, not on feelings and imagination.*

"Each research report tells, with considerable care, the procedures which were used. Scientists put a lot of weight on having the procedures right. Whether a work is scientific or not depends on whether scientific procedures are used. This is the criterion of science. So I will go to the authorities and I will find out what the approved procedures are; I will then use those procedures. My own thought processes are to be disciplined by those procedures and I am to be governed accordingly. It is plain that *I am to use procedures approved by scientists, not my own unproven ways of doing things.*

"Regardless of the particular procedures used in different scientific reports, one finds a similarity among them all. This is due to their common use of the scientific method. When one reads novels, plays or poetry, looks at a painting, or listens to music, he is doing something quite different than when he reads a scientific report. Science stresses commonality, principles that run through everything, facts that abide whether man wants them or not, proof, security, reliability, basic truth on which man can build. The arts and humanities stress the unique, the unusual, the individual instance, the events on the inside of people, their feelings, dreams, imaginings, values. What is appropriate to the arts and humanities would be ruinous to science. The basic methods are different and should not contaminate one another.

Therefore, *I would use the scientific method, not the methods of the arts and humanities.*

"Science is an accumulation of the tested experience of a lot of people, put into an orderly system. In comparison to the size of this experience, my own personal experience is small indeed; in comparison to the tested quality of this experience, my own personal experience is untested and fragile indeed. I would do well, in cases where my experience seems to run counter to that of science, to question the validity of my own experience and to trust science. In other words, I am to recognize that *my experience has little worth compared to the accumulated and tested experience of science.*

"Science makes progress by moving carefully from the known into the unknown. A research problem needs to be located on the edge between the known and the unknown, being fitted into the former and extending a short way into the latter. The thing for me to do, in selecting a problem, is to study science until I find one of these places; then my work can be a contribution. Otherwise, should I take a problem from what I personally need to know, my work might well be repetitious, irrelevant, fragmentary or just plain foolish. My personal needs have all sorts of aberrations in them and do not constitute a suitable source for research problems. *I am to select a problem in relation to what science needs to know, not in relation to what I need to know.*

"In doing research, the satisfactions must come from how things are done, not from the content of what is dealt with. A person dare not become intrigued or emotionally concerned with the content or he will, in proportion to that involvement, be biased, partial, personal and subjective. I am to remind myself, in doing research, that *I am to try to get my pleasures from the reliability of my procedures and not from the nature of the content with which I deal.*

"There cannot be truth in science if there is error. Mistakes simply cannot be allowed. To make a mistake myself would be most embarrassing. My choices must be cautious, my procedures must conform to standard, and my operations must be careful and thorough in every detail. I shall not forget; *I must avoid making mistakes.*"

Projected toward a world view, these statements give a picture of a universe in which a researcher is called upon to put himself as far out of his research as possible. His thinking continues:

"The universe is huge, far beyond man; the universe is filled with many events, far more than man can ever know; the operation of the universe depends on vast powers, against which man's power is weak.

To run the universe, there are natural laws which, to handle so much power and diversity, must attain a perfection far beyond anything a man could dream, and against which man's mental fabrications are clumsy, partial and impure.

"These natural laws were in operation long before man came onto the earth and will be in operation long after he is gone. They change not one jot or tittle for me or for any man; they are truly impartial, impersonal and universal. If I am to learn of these laws, I, too, am to become impartial, impersonal and universal even as they are. Scientists, achieving this attitude, have been able to transcend their normal human limitations and to reach into that region which is usually outside man's direct experience. By revealing these basic laws of nature, scientists have helped man to see the truths to which he must adjust.

"Basically, man adjusts to nature. Nature creates and man fits to that creation. Man may think of himself as the product of nature's creation or as something separate from nature, in a different class, but in either case he is beholden to something which is beyond him and separated from him—something more powerful, truer and more real than he is. *My job, as researcher, is, therefore, to achieve that separation from nature which allows me most clearly to see nature's truth so that I and other men can fit ourselves to that which has to be outside of me and man.*"

This world view may have a seeming rightness and majesty about it, the sound of a familiar dedication. The statements lying back of it may also seem right, or just about right. There are good cultural and psychological reasons why this would be the case.

Why the Consumer's View Is Appealing

One reason the view seems sound is that it is familiar to us as a part of a very long cultural heritage. During the Middle Ages, we held a primary split between man and the supernatural. After the Renaissance and Reformation, we made a primary split between man and nature. This split prevailed in the formative days of our nation when we were struggling against nature to get a wilderness subdued and a continent fit for habitation. It made its deep impression. The same split holds today though the form nature takes is not now a wilderness but the physical and chemical structures out of which are manufactured our technological advances. We are still using a great share of our national energy in the conquest of physical things "out there" so that they can serve us. In this separation of man from the to-be-conquered "out there," it is easy for a researcher to assume that

man is separate from that which he seeks to comprehend and to stop with a concept of research which leaves no place for the researcher in what he creates.

It is easy to accept this condition because *popularized conceptions of scientists* provide a psychological place for the scientist to be! Since he cannot normally be in nature, he can have access to truth which nature holds only by being able, from time to time, to break through his normal human barrier and occupy a supra-human position. This is the position of the ancient witch doctor and the position which the scientist now holds in the psyche of the general public. Like the witch doctor, the scientist is seen as normally being a human among all the rest, but, by donning suitable ceremonial garments (typically a white coat), by uttering suitable incantations, otherwise meaningless (mysterious formulas and technical jargon), and by carefully following certain ceremonial procedures (scientific methodologies), he can invoke truth out of a mysterious beyond.

Primitive as this solution may seem to be, there is very little else millions of laymen can do when, assuming a split, they try to give a place in their psychological world to the people who penetrate nature on occasion and who do it so cleverly they can get nature to kill on a horrible scale, or, capriciously, to prolong life and add to its comforts. To these laymen, a scientist is somehow a man and yet a mysterious phenomenon, a different breed, a ceremonious, powerful, capricious creature, sometimes a devil bringing fantastic evil, sometimes a god bringing the most precious good. Needing to solve this problem, their easy solution is to give to the scientist that place in the psychic order which was created by our ancestors to make their life somehow tolerable when they, too, were caught with a yawning split in their assumptions and with no rational place to put phenomena that seem somehow to inhabit the regions between assumptive poles.

It might be possible for people to work their way more easily toward transcendence of these elementary splits if the education they received during formative years had transcended the splits rather than added to them. But our schooling has typically run another separation which has added to the habit of accepting splits and to the difficulty of recognizing any splits at all.

The split has come in separating the subject to be learned from the person of the learner, with each half of the dichotomy given a status independent of the other and the former given top billing. The "subject" is given the status of an entity in its own right, with its own laws of organization, its clear-cut "rights" and "wrongs," and authorities behind it. The psychological reasoning goes something like this:

"A subject exists before a particular child comes to it and will continue to exist after the child has gone. A child exists before he comes to a particular subject and will exist after he has left it, whether he has learned the subject or not. The two, subject and child, are in separate systems and are independent of each other. They have no necessary connections.

"The subject has its own conceptual order—geometry, for example. This order is necessary to the subject, *is* the subject, as a matter of fact. A student who learns geometry learns this order. When the student has fitted his mind with this order, then he knows the subject. He can be tested by being required to respond to the problems which occur in this conceptual order, and, if he gives responses which are 'right' within the system, then he is developing a 'disciplined' mind in the subject.

"It is the conceptual order of the subjects which makes it possible to stabilize the schools. The children are forever changing, coming by the thousands, staying awhile, and passing on through. This changing amorphous mass can be controlled by making the subjects the center of the system. Let the students come and be pitted against the stabilizing core of the subjects. Hire as teachers those who know a subject well and let them teach that subject. Group the students in convenient numbers and send them to a given teacher to 'get that subject.'

"If a student doesn't 'get a subject,' mark him down, for, of the two things, the subject and the student, it is the student who is in error and needs to be disciplined to fit the discipline. The 'subject' is the basic, elementary construction to which the student is to adjust. The subject contains the laws to which the student submits. The subject is the creator; the child the created."

The key to this conventional formula for education is "let the system of the schools be the system of the subjects and let the students fit that system." The center of value, of right, of organization, of psychological action is "out there" in the subjects. The job of the student is to learn how to behave from positions in systems outside himself. The job of the teacher is to see that the students most quickly and easily fit themselves to these outside existences and controls.

Brought up in this kind of education, a potential researcher is disposed to assume a separated "out-thereness" as one of the elementary conditions of existence and not question it or quest beyond it. The assumptions of a split between man and God, between man and nature, between the person of the student and the subject of his learning, are all one consistent construction.

As if this were not already enough, there may well be, for the potential researcher, still another potent experience to drive the split on home. This comes at the higher levels of education where he may enter on training to do research! This is the graduate level where one would expect transcendence of the split if that were necessary to research production. But we still have, as predominant, the consumer's orientation to research, the split and the self-abnegation.

Right up to time to do the doctoral dissertation, the graduate student's curriculum is likely to be heavily dominated by regular course work. In these regular courses, he is required again, as in high school days, to fit his mind to the conceptual system of subjects. He may, in addition, have seminars with major professors in which he might be able to brush elbows with an actual research producer and get some of the training for the inside drama on how a producer handles himself in order to get significant and creative production out of himself. This will not occur, however, unless the seminar teacher has consciously become aware of the difference between guiding a student through a subject and guiding a student through himself into creative engagement with a subject. The former and conventional orientation is much the more common so that the seminar is most likely to be another course, only "more chummy."

Where a student is most likely to confront himself, head on, is in his "individual problems" where tutorial relations may be possible under conditions where the lead is taken by the student. Then the student may operate as a producer and not be limited to the consumer's role. Yet these potentially precious hours may be very few and be low in both the student's and teacher's value system because they are hours sandwiched in to fill out a pattern of "full credits every semester" for the student and are added, without administrative recognition, to the professor's already full course-work load.

One might suppose that courses often offered to graduate students on "how to do research" would make the correction. Certainly these would have the producer's point of view! But, following unconsciously on past habits of consumer orientation, these courses, too, easily become "a course," a prescribed conceptual system presented as something for students to learn as they would learn any other conceptual system.

"The scientific method is (a) . . . , (b) . . . , (c) . . . , (d) . . . ; the general types of research are (a) . . . , (b) . . . , (c) . . . , (d) . . . ; a problem for research is well stated when (a) . . . , (b) . . . , (c) . . . , (d) . . . ; the collection and assembly of relevant data require (a) . . . , (b) . . . , (c) . . . , (d) . . . ; analysis of data is tricky in these respects

(a) . . . , (b) . . . , (c) . . . , (d) . . . ; validity is important because (a) . . . , (b) . . . , (c) . . . , (d) . . . ; reliability is important because (a) . . . , (b) . . . , (c) . . . , (d) . . . ; statistics are advanced and complicated these days but the ideas in them are simple, (a) . . . , (b) . . . , (c) . . . , (d) . . . ; in writing up research, be sure to (a) . . . , (b) . . . , (c) . . . , (d) . . . ; etc."

The inference is made that one who knows these things knows how to do research. The logic is comparable to assuming that one who knows how to make a map knows how to make a journey. The student has done a lot of conceptual map making from maps made by others, and this course is one more in the series. But, coming to his dissertation, he finds the independent research then required is much more involved and very differently centered. The primary data come in the direct experiences of the journey; the directions for action come from inside one's self. Not even the map making turns out to be the same because making a map of meanings from one's own direct experiences is a different sort of thing than making maps from other people's maps. There is a major shift in one's psychological space.

But graduate students can often take "training in research" without making the shift. Coming finally to their dissertations, they struggle with themselves more than they struggle with "the problem" because they have not yet learned how to put themselves into their inquiry.[1] They still have the consumer's orientation, and so great is the pressure of tradition and habit that many students graduate with a doctorate and still do not realize the significance of the changes involved in creative research production.

So there are good reasons why you or I or anyone, Ph.D. or not, should feel somehow reasonably comfortable with a consumer's orientation. In summary:

1. We are broadly exposed to a consumer's orientation by a long and infiltrated cultural tradition which splits man from nature (or God) and gives man no substantial place to put himself when he tries to join the two (or three).

2. We are able to accept the split and feel at home with it because of an ancient psychological inheritance which provides the position of witch doctor to solve just such problems.

3. Furthermore, we are trained in operating split-wise by our years of schooling where the self of the learner is separated from the subject to be learned, and the former is made subservient to the latter.

[1] For case histories and discussion in more detail, see "Evaluating Graduate Education," *Harvard Educational Review*, Spring 1955, p. 85-94.

4. Graduate schools, which might be expected to make the shift to a producer's view in their training of research workers, get caught in the cultural tradition, the psychological milieu and habits of past schooling so that they, too, often do not help their students transcend the splits to realize the integrations needed for fruitful research production.

But, comfortable or not, it is deadly to research production and to the producer himself to try to do research within the consumer's orientation; it is much too cramped and much too anchored at the wrong places.

What the Consumer's View Does to the Producer

In condensed language, the consumer's view:

1. Cramps the producer's thoughts by requiring him to use an intellectual system based on arbitrary splits—truth vs. value, logic vs. feeling, universality vs. uniqueness, science vs. art, nature vs. man, etc. Much of the researcher's strength is bound up in just getting things separated and kept in their proper places.

2. Introduces anxiety in the producer's thinking by making the arbitrary intellectual system also an arbitrary moral system. To one half of the splits are assigned the qualities that make for the good, the true and the perfect; to the other half are assigned the qualities that make for the bad, the false and the imperfect. The good half is the impersonal half; the bad half is the personal half. Every time a researcher makes an intellectual split, he is also making a judgment involving the placement of himself with respect to his being personally good or bad. A mistake in classification risks personal guilt.

3. Robs the producer of a positive motivation by denying him the chance to claim anything good for himself: nature cannot be claimed, for it is already presumed to be separate from him; creation can't be his for it is nature's; truth can't be his for it, too, is nature's; ways of getting at truth can't be his because they are already prescribed by, and are the property of, science; his problem can't initially be his because it must first come from science; not even his conclusions can really be his because they must be shown as coming from independent facts and data which "speak for themselves."

4. Enforces on the producer a negative motivation by assigning him a negative, trouble-making role. Values may be his but they are misleading; feelings may be his but they are private and are to be ruled out of bounds; the uniqueness of his personality may be his but it is

distorting. Self-participation in inquiry only deforms the data. Man is the imperfect one, the weak one, the little one, the partial one, the created-but-not-creating one, the deformed one, the guilty one in any aberrations. In contrast, nature is flawless, true, perfect, powerful, inclusive, creative. It is man, who, damned in the very act of being born a man, is also recurrently damned throughout his life because he is the maker of any mistakes.

With energy dissipated in anxious sortings, nothing good to belong to and nothing trustworthy to be or creative to become, the researcher has a heavy, tiring struggle in trying to do research. He can't give his energy because he can't give himself. He can't give himself because there is no substantial place to put himself which is good and hopeful and natural and freedom-giving to his mind and spirit.

A good many sensitive, wholesome and energetic teachers and administrators, sensing the artificiality, brittleness and strain of research as conceived in the consumer's manner, will not submit themselves to doing research. They do not want to give up their freedom to engage themselves wholly in what they do. Sensing no substantial place to put themselves, so very large a place to make mistakes, and so very much of other people's maps to learn without a proportionate place to discover and develop maps of their own, not even the first beginnings of research are worth the trial to them. Self-respect prevents investments in research by this kind of person.

Others are frightened away because they fear their lack of ability to do the skill-tasks that are usually necessary in research. Much of this fear is unfounded because of the strength that is available to a person who is finding himself in what he does. A person who pursues problems of genuine importance to his personal growth releases a lot of energy for doing tasks which would otherwise seem heavy and hopeless.

Then there are people who, for one reason or another, *do* undertake to do research even though they have not transcended the consumer's view. Their reasons lie beyond the activity itself, e.g., others are doing it, advancement requires it, this is the way to play the game. In such cases, one of three types of degeneracy is likely to occur in the researcher as a consequence of his having no constructive place to put himself: (a) submissive conformity, brought on by identifying one's self with an important person in the field, taking on his ways and ideas and personality, thereby allowing the researcher to hide from himself in the cloak of another; (b) assertive demagoguery, brought on by taking science to be something pure and sacred so that, in taking the role of scientist, the researcher can think of

himself as one of the "already saved," one whose word is already right, and who, therefore, need never be faced with himself; (c) ambivalent escapism, brought on by trying to take research as something done "on the side" as if one were not really doing any of it at all, thereby allowing the researcher the hope that he can escape any confrontation of himself as a consequence of his scientific pursuits. All three types of degeneracy have one cause in common, a world split between man and nature so that there is no natural place for the man to be who joins the two, and one effect in common, a denial of one's self so that one need not face himself.

Any system which allows and encourages a man to escape himself leads toward his psychic dissolution. As ancient wisdom points out and modern science confirms, a man's nature is such that he confronts himself if he lives at all. Man is actually unable to leave himself out of his life and, even though he may seem, in his own eyes, to be temporarily successful, what happens in cases of self-denial is that the image denied entrance at the front door of consciousness enters unobtrusively by the back door of unconsciousness, clad in another garb. The inner drama is then more erratic than before with the person less able to keep track of what he is doing and of what is going on around him. To press in this direction is to invite mental illness and to succeed is to break the circuit of psychic life altogether.

Clearly we do not want to promote the consumer's view if we want to produce research. We want a psychological set which, instead of being negative, abortive and eventually destructive, is quite the opposite. We want something which is freedom-giving, personally and scientifically rewarding, vigorous and progressively penetrating. We want a way of holding assumptions about research which makes it possible to integrate the pursuit of science and research with the acceptance and fruitful development of one's self. The two, science and self, can be one integrative action and, indeed, need to be one integrative action if either is to be productive and grow.

This requires a shift from a consumer's view to a producer's view. It is well to have in mind the broad nature of this shift before we try to talk directly from a producer's point of view.

The Nature of the Shift

What it means to shift from a consumer's view to a producer's view may be suggested by three analogies:

Picture a shopper going into a grocery to choose fruit to take home to eat. He needs to use a range of judgments which, focused through

sights, smells and touch, make it possible for him to pick the particular fruit which he feels will be most satisfying to his taste. He judges the mellowness of bananas against the crispness of apples, against the juiciness of oranges, etc., and when he picks one of these, he then judges among the samples available from within the type he wants. His action, as consumer, is shaped within this context.

Now picture a producer of fruit and the context of his judgments. Fruit is the product of a long and complicated process. Involved are such different phenomena as sunshine and rain, heat and cold, bees and blossoms, soils and diseases, fertilizers and sprays, hired hands and wages, market prices and costs. Fruit growing involves judgments of these many things. A producer's mind has to be fitted with scores of these contexts. *What serves him to judge the fruit produced, as if he were a consumer, is important in its time and place, for he must see his product as if he were a consumer, too, but it is only a small part of the total range to which he has to be attentive.*

What folly it would be for a person to assume that the range of his judgments as a fruit consumer would, in itself, be sufficient for him to make decisions concerning what was important in production! Yet consumers of research often do just that in presuming that they can reason from what is characteristic of the research product to what is characteristic of the production process! One wishes the differences in product and process were as openly obvious in research as in fruit growing.

A second analogy, already introduced, is that of a play, contrasting the frame of reference of a playgoer watching the play (consumer) and the frame of reference of an actor in the play (producer). Though both may, at a given moment, be looking at the same bit of action on the stage, the playgoer's concern is differently oriented than the actor's. The playgoer takes the action as a cue to the unfolding of the play and takes the play as significant according as it fits into the personal experience of his life. The actor, on the other hand, takes the action as a cue, not only to the progression of the play, but to the way in which the person performing the action is handling himself in structuring his role. The playgoer can forget an actor is a person behind the role he takes, but an actor cannot forget the person because he knows that any role an actor takes is structured out of a person, as well as out of a play. The actor's progression, in observing a bit of action on the stage, is therefore (a) from himself, as if he were the actor, (b) to the play, (c) to the role, (d) to the bit of action seen; whereas the progression of the spectator, in observing the same

action, is in the reverse order—(a) from the bit of action seen, (b) to the role, (c) to the play, (d) to himself. In research, the shift from consumer's to producer's orientation is just as marked. The dynamics, in consuming research, is from product to person, and, in producing research, from person to product. In production, the self of the producer is his basic ground for all that follows. The self is central and pervasive.

A third analogy, also already introduced, is that of map making, contrasting the frames of reference of one who makes maps from other people's maps with one who makes a map from his direct experience on a journey. The former is comparable to a consumer's orientation and the latter to a producer's orientation. To make a map from direct experience on a journey is to take stimuli which do not come in the shape of maps at all and to transform these cues into a map-like product. This is very different from taking stimuli which are in the shape of maps already and then making maps out of them. Though both the producer and consumer make decisions, the producer is much more caught in necessities for self-commitment, self-knowing, self-confidence, self-decision. *It is not that what the consumer does is arbitrarily wrong, for acquaintance with the maps of others is what allows a producer to construe a map of meaning to others when structuring his direct experience into a map form, but rather that what the consumer does leaves out the core which the producer must use to integrate and direct what he does.*

Coming through these three analogies are summary observations on what is involved in the shift from a consumer's view of research to a producer's:

1. A change in the kinds of judgments required
2. An increase in the range of judgments required
3. A shift in the focus of attention from the characteristics of the product to the characteristics of the production process
4. A reverse flow in the dynamics of thought, being from product to person in consumption and from person to product in production
5. A recognition of the fundamental and initiating status of the self in research production.

With these high lights we may now be ready to occupy the producer's viewpoint with greater freedom than our habits, otherwise, would have granted us.

A Producer's Point of View

A research producer can be more productive if (a) he feels open and friendly toward his universe, (b) he believes in himself as a legitimate and necessary center of his experiencing, (c) he has faith that what he can consciously do can have a worth-while influence on his universe, and (d) he feels comfortable in thinking esthetically, i.e., with sensitivity to structural harmonies in his experiential formings-and-flowings. At the level of his musing on himself and his world, his thoughts may be pictured as follows:

"I exist in a universe. The universe is very large in space and time. It is an energy system, composed of many beings, each of which is an energy system having its particular space-time position. No other being occupies my particular space-time position. I am differentiated, individual. Whatever I realize of the universe, I realize from where I am, and no other being realizes life from where I am. This is my uniqueness, my being.

"Within the largeness of the energy system of the universe, the energy system which is differentiated as me is relatively small. I am included along with billions upon billions of other differentiated things. The system which is the universe is the system of these beings in one—one being, one existence, one system.

"Within this largest one, my differentiated being is joined into all the rest, into all other beings, into the whole universe. I am an intimate inclusion within all. This is my universality, my belonging.

"Relations which, followed in their outward reach, compose my universality and my belonging, compose, on their inward reach, my uniqueness and my being. This mutuality of relations in one immediacy makes the wonder of life, the source of paradox and resolution.

"This condition establishes the self of me, not as my possession, but as the means to mutuality through which the universe is formed and I am formed as one spontaneity, one existence, one life. So it comes about, the deeper truth I have known, that the respect I hold for myself is respect, at the same time, both for me and my universe. The universe is a self-reflexive integration.

"As an energy system, open to all other systems, I am constantly spending energy, which, as it leaves me, calls for my constant seeking of renewal by fresh inclusions, taken from the universe into me. This gives my life a forward thrust, as, leaning into oncoming time and space, I go from my emptyings to my fillings in the rhythmic reaching, grasping, including, using, losing, emptied reaching, that

make up my days. In moving from things gone to comings, I achieve the coming of my being, my becoming, my unique sequential ordering, my emerging pattern of belongings, wrought, in space and time, into my being.

"In reaching out for food to feed my becoming, I find not all other beings are potent forms for me. I cannot eat all, breathe all, perceive all. I can only use what fits me at a specific time and place. So I have to turn into me to find what the structure may be of the emptiness there and to use that structured emptiness as means by which to search the horizon of possibilities. Thereby, I may be able to find a structured form that, fitting to the structure of my emptiness, grasped and taken into me, fits and fills my need. This is the order of claim.

"In the harmonizing of structures, whereby the shape of emptiness, from within, and the shape of potentiality, from without, have their fitting, lies the resonance of life, its happiness and fruition. In this esthetic intercourse and its confluent transformations lie also the means by which experience gets its ordering, the psyche gets its structuring and thinking gets its forming.

"I am not only a *being* with *belonging* in the universe, and a *becoming* out of these, but also a *fitter*, fitting the universe and me in reflexive transformation. Agent to this fitting is the self, performing as a womb to give birth to life's significance, allowing for the conception of being, the nourishment of belonging, and the progression of becoming. Life is a constant birth, and the experiencing of life is the experiencing of the birth of its significance. For this, the self is means in the development of an ever more universal, and therefore more fitting, man."

In such a frame of mind, a producer of research comes to the consumer's declarations (see the second section of this chapter) with reactions like these:

"Research reports are written in the third person but they are written by a first person; they are done by persons. Research is inescapably a personal formation.

"Research reports may be written as though the events observed would have occurred had not the researcher been involved, but this is not to hide the fact that when a man observes something his observing includes himself as observer. A man may generalize on his observations to say 'water runs downhill' and mean to point to events which occur, whether or not a man observes them, but this is not to hide the fact that when a man generalizes, his generalizing

includes himself as generalizer. There is no escaping one's self in observing, generalizing, thinking, imagining, proving, testing, dreaming, sleeping—in any act of one's own experiencing. The self is central and though one may be privileged to speak of goings-on at places not present to him, he is not privileged to deny that it was he who spoke. The world a man knows is a world created within his experience and not apart from it.

"This is not to say that nothing exists unless a man knows it, but rather to say that what a man knows to exist involves him because the act of knowing is his action. Neither is this to say that nothing exists independent of man, but rather to say that when a man relates to any event which he takes to have been previously independent of him he is involved at the point of relating. The relations of his universe are centered through him and such truths as he knows are creations of relations matrixed in him. Truth is his truth and how universal it comes to be depends on how universal his connectedness becomes. It is a mistake for a man to look for 'truths which exist on their own account.'

"Since I participate when I observe, it is nonsense to try to split me and to say I can 'observe but not participate.' The point worth making here is that a man can give his attention in such a way as to encourage a state of mind needed for the careful searching of possibilities on the horizon beyond him or to encourage a state of mind needed for the aggressive grasping and shaping of what has already been named as wanted from among the possibilities. The former is akin to 'observing' and the latter to 'participating'; in neither case, however, is the actor himself removed from the action. It is a matter of a man giving his attention as is called for in the ebb and flow of his transactions with his environment.

"To be asked to 'not be influenced by my values' is to be asked not to be influenced by my bonds of belonging or my tentacles of becoming. It is to ask the impossible, for what I am is involved in these. Values signify the inescapable necessity of man that he select some things from among all things for his appropriate use at each specific time and place and that he so choose as to enhance the fulfillment of his life. 'Values' is a name for what is useful in 'fulfillment.' The more sensitive I can be in investing myself consciously in realizing my values through my research activity, the more profoundly I can penetrate universality. The road to conquest of sentiment and superficial identification is not through the denial of sentiment and identification, but through its ripening into conscious valuing.

"As a scientist, I am concerned with the 'good' as well as the

'true.' I see the 'good' and the 'true' as reciprocally fused in one rhythmic stride through life. Striding requires of me a foot on the ground to hold my weight and a foot on the move to carry me forward. Through the foot on the ground, I am sensitive to the question, Will the earth support me here? Through the foot on the move, I am sensitive to the question, Where would be good for me to go? The former is the question of 'truth' and the latter is the question of 'good.' Neither is serviceable to me apart from the other, for both are appendages of the one that is me and both are equally true and valuable for me. I can benefit at times by giving special attention to whether the earth will support me, for I may not be sure it will or I may be less sure of this than I am, just then, of where I want to go; then I emphasize my quest of truth. At other times, I may benefit by giving special attention to where would be good for me to go, for I may not be sure of my choice or I may be less sure of it than I am, just then, of the earth's supporting me; then I emphasize my quest of good. But, again, this is a matter of my giving attention according to the ebb and flow of my transactions with my environment. It leaves me squarely in the center of my life as the creature through whom the relatively true and the relatively good get their formation, relation and inseparable function.

"In respect to 'findings that speak for themselves,' I know of no such data. It is a man who speaks; data are a man's formations. In speaking, a man may want to convey his feeling that some things come to him as if 'given,' such as the earth he walks on, and some things come to him as if 'arrived at' through a progression of steps. The former he may label 'data,' and the latter 'conclusions.' These labelings may help him to map an experiential journey which is easier for others to follow, but the 'data' or 'conclusions' are constructions within the speaker's experience and speech, not apart therefrom.

"Research reports emphasize testable demonstration and clear lines of relation in rational thought. This is as it should be since the purpose of such reports is to lay out conditions for experience so that a reader may, if he chooses, try to make 'the same journey' on which the scientist is reporting. He can then find out whether what happens to him is like what happened to the reporter. This is the basis of scientific proof, a way of allowing people to submit themselves to progressive circumstances which are highly similar so that they may share their responses, judge the similarity in patterns of experience and thereby sort out better what still further people could count on or not count on in their experience. Scientific proving honors, and is

built upon, the careful sharing of patterns of experience of individuals where each individual is invited to invest himself and learn, in the private authority of his own togetherness, how his experience runs. Science has developed by holding to the authority of the self-experiencer.

"Testable demonstration and logic are efficient ways by which one researcher can provide the map lines to tell another how to guide himself into similar circumstances. Once in the circumstances, there is much more involved, however, than the activities which are tied directly to the making of map lines. In the midst of the experiencing, there is no way of knowing what the outcome will eventually be. One has to feel his way along and trust his feeling to guide him into moves that only later can be given a logical map-like form. He is caught as any man is caught who has not yet solved his problem. He has to imagine what it might be like to try 'a' or 'b' or 'c' or 'd' in a given situation. The more potentialities he can draw upon in his imagination, the more chance he has of being able to select the one route which will eventually turn out to be the best road to take and the best map line to draw for others. Rather than scorn feelings and imaginings, the productive researcher gives these aspects of himself a full and challenging place.

"When scientists recommend certain procedures, what they are saying is that people who trust these map lines will find that the roads recommended are useful for taking a direct experiencer from one given destination to another. They are not trying to say to people, 'take only these roads'; rather they are saying, 'if your journey requires you to move between these given destinations, then you will find these roads useful.' The individual experiencer still has the journey to take for himself and test for himself. The recommended map line is not the substitute for the journey—and this the scientist knows 'for sure.' When the journey requires him to enter new territory, he is not doing anything substantially different than when taking a recommended path; it is only that he can more readily share the pattern of his experience on the recommended routes than on the untrodden ones. To train oneself to trust only the approved procedures of scientists and not to trust oneself, as the consumer's view suggests, would be to make a great mistake.

"Likewise to follow the consumer's view in separating scientific methods from the methods of the arts and humanities is to err. Both the scientist and artist are direct experiencers; both have the problem of providing maps for their journeys. The painter does it with colors and lines; the scientist does it with experimental conditions, contrap-

tions and conceptions. Both are seeking the extension of themselves into universality; both are operating as unique persons from their specific space time locations in the universe. The scientist is a creator like the artist; he has the same problems of self-containment, self-development, self-assurance, self-awareness. He has, in the artist, a particularly good companion for the formative period that comes before hypotheses have been adequately expressed for test. This is that part of the scientist's work which is especially private, in which much has to go on at the feeling and imaginative level in order to evolve structure in an otherwise amorphous field of possibilities. Artists have a long history of experience in dealing with those phases of their activity. They have much to teach the scientist and it is too bad that the emphasis on the public product of science has hidden from so many people, even scientists and artists, the depth of their mutuality. A producer is a creator and there is more to be gained through sharing among creators than there is through separating differences in products and making hasty presumptions that the characteristic differences in products denote the same kinds of differences in production.

"In creating a problem to work on, a researcher is wise to proceed in a way which is just the opposite of the way recommended in the consumer's outlook. To the consumer it seems that an individual's need for problem solutions is a very erratic base on which to build science. His advice is to 'select a problem in relation to what science needs to know, not in relation to what I need to know.' In a world presumed split to start with, a choice of this kind is called for, but in a world where I am within nature and nature is within me and the two are extensions within the same integral system, there is no need for an arbitrary choice in these terms. Science is then seen as a pursuit by persons to clarify the extension of themselves into the universe. As the uniqueness of their personal position in the universe becomes clearer, their connectedness into universality becomes also clearer. This is one operation, made possible by investing oneself to the hilt and following out the clarifications.

"Hence the problem I create to work on is to be a problem of importance to me personally. In it, I can sense my purposes on their way toward fulfillment, my values under test, my self-conceptions and reciprocal world-conceptions under change. In the course of clarification of what is important to me, I come to some roads of knowledge which other scientists have already charted and, on such roads, I can expect to share my experience as I also go along. Other clarifications will require that I go into a frontier to make my own maps alone.

Whether the direction which is personally important to me takes me into old *or* new territory, it is necessary that my guidance form within me. Otherwise there is no center of integration, no way of letting experience form where it has to form, i.e., through the self.

"This means that I am also deeply interested in the content of my problem and do not follow the consumer's advice to be disinterested in content and interested only in the reliability of my work in carrying out the right procedures. The consumer's fear is that an interest in the content means bias, prejudice, personal involvement. I sympathize with his concern that the researcher not freeze in his tracks, but I do not expect a researcher to be able to open himself into an expanding universality by making choices between content and method! He will be freer of mind and more open to growth by an arrangement which invites him to achieve his universality through accepting himself as central and investing himself in working out problems important to him. He will seek reliability of procedures, then, as a necessary part of wanting to be sure he is not fooling himself in matters important to him.

"He will expect to make mistakes and he will not think of himself as a sinner if he does make a mistake. Mistakes are things which are 'taken amiss.' It is only by knowing what one has taken amiss that one learns what is necessary to be solved, the nature of one's need, the potential structure of one's emptiness. This does not mean that one aims at making mistakes in order to be a good scientist, but it does mean that in one's ever-reaching for progressive inclusion, one will miss in some of his selections. The 'big thing' is *not* 'not to make mistakes' but progressively to integrate and use mistakes as means in this progression."

Whereas the consumer's world-view presents splits by the score because of its rudimentary splitting of nature from man and the postulation of two universes, the producer's world-view provides a frame of mind which integrates man and nature and presents one universe. Man can take himself to be *in* this universe, working out from his given center toward progressively increasing extensions of conscious connection. A man's total connections within the universe are doubtless millions times more than he can consciously name at any given time or can learn to name in his lifetime. But, through conscious knowing, some of the vital connections being formed within life-on-the-make are possible of realization. Increased sense of the richness of life is also possible through cultivating a widening awareness of connections-taking-place.

Man's primary connections appear to run between what has already been included as inside his life and what he takes to be currently out-

side his life but facing him as potentiality of yet being included. Life evolves in the effecting of connections between what is structuring on the inside as emptiness or need and what is structuring on the outside as suitably matching potentiality for fulfilling need. The greater the range of realized connections while this in-and-out-and-in-and-out transacting is going on, the larger can be the fittings of needs to potentialities and the more can be the resulting resonance of being, belonging and becoming. This also means a greater realization of self.

Splittings which are so prominent in the consumer's view are less prominent in the producer's view, not because the producer does not use dichotomies in his thought, but because he uses dichotomies in a different way. The consumer uses dichotomies for division-into-two, whereas the producer uses dichotomies for differentiation-within-one. Psychologically, dichotomous polarities seem to be necessary in order to provide the means by which tensioned relations can be set up for the grasping of forms in experience. The situation is like that in the physiological and physical context where a man is provided with two arms so that he can have a tensioned grasp of an object from both sides when he wants to include it in some useful action. An object cannot be picked up with just "one"; it takes at least "two" in suitably opposed yet unified tension to grasp "one." This seems to be the condition psychologically as well as physically.

Psychological polarities are therefore to be accepted and used. The wrong and the danger come when a person forgets that the two arms of a man (or the two ends of a dichotomy) are useful because they are protrusions of *one* system. They allow a sense of differentiation out at their ends, but it is their togetherness in one that makes the difference a connection. Realized as differentiations-within-one, and therefore as connections, polarities can promote richness of integration, increased self-awareness and affirmation. Taken as divisions-in-two, polarities promote disintegration and denial of self.

Though the split between man and nature in western civilization has been strong in the past, we may now have come to a point in our cultural development where we can see this polarity as declaring a unity, rather than declaring an absolute separation. Science need not be taken as a witch-doctor's bridge between two irreconcilable universes, but can be seen as a means of cultivating a consciousness of progressive extensions of self-in-the-universe. It is a way of realizing the character of man's home in his universe and, in its essential processes, is not different from what a child goes through when he awakens to consciously realize himself as a being, and tries, by extensions of his belonging, becoming and fitting to realize the home into which he has been born.

The universe is the adult man's home and he seeks his being, belonging, becoming and fitting in that context.

Why the Producer's View Offers Hope

There are cultural and psychological conditions which give strength to the hope that we can make the shift from split to integration in our view of science and ourselves. Man's trouble is great enough to cause him to re-think the place he wants to give himself. He has examples of how splittings between groups of men, when taken to be absolute, have led straight into the jaws of death. His feelers are out for a deeper unity which takes the splits and puts them under control so that instead of being causes of death they are enriching differentiations of a healthy whole.

For thousands of people, the challenge could not be plainer; for thousands more, and perhaps millions, the challenge is felt if not seen. Many people will respond with appreciation and hope to positive views of man. Many are tired of the frustration of having a thousand pummelings from different directions on the outside and no way on the inside to order their decisions into a simplified, hopeful, positive progression.

In the cultural tradition, there is a symbol around which hope centers when the going is rough. This is the symbol of creation, found in the great men who epitomize its human form at the level of conscious cultural realization. Creativeness is honored in the honor done to great men in all cultures. Though the honoring may be postponed until a great man's death or may be allowed to a living man only if he is in another field than one's own (social birth of a great person brings birthpangs in those out of whom new ways come), the fact remains that creativeness in man represents man's most pervading hope for going on.

What is needed now is not only the happenstance of a few creative men in the total population, but a direct and widespread honoring of conditions for cultivating creativity among people generally. People are threatened now, whole nations at a time, so that what is called for now is emergent greatness among people, whole nations at a time.

This calls for a big shift in the search for creative greatness so that we try to see it and cultivate it in every person, not in just a few. This is the primary job of educational institutions in every land. It is a particular call to education in our own land where we are daily challenged to take the world initiative on many critical matters having to do with the way man is to look at man. In our schools we need

curricula which help children progressively to realize themselves as creative beings in a world needing them at their emergent best—open, centered, disciplined, esthetically dynamic. Research in education is the challenge to make the best use of man's mind in this pursuit. What is presented in the previous pages as the research producer's point of view is an orientation to attitudes for taking research as a creative enterprise in pursuit of creative development.

In this view, it turns out that a researcher in the curriculum is, in effect, trying to find ways of providing to children the kind of engagement with life which he wants also to have for himself. He wants a curriculum for them which is psychologically serving them as his inquiry is serving him. What he learns about conditions which are good for freeing him in *his* development are learnings as well for conditions which are good for freeing children in *their* development; what he learns concerning conditions which are good for freeing the children in *their* development are learnings as well for conditions which are freeing for him in *his* development. The interdependent reflexiveness of the researcher's inner and outer frames of reference carries him onward as a person while it carries him onward professionally. And what helps the child helps him.

Creativeness among persons who are reciprocally working for creativeness in themselves and each other brings a self-reflexive return which advances the energy level considerably beyond what it ordinarily is. The fittings of selves in reciprocal harmony turn loose energy otherwise lost in the striving for such fitting. In this release of energy lies the main hope that the producer's view may grow and eventually provide a power which is great enough to control the conditions for destruction which have been symbolized by the splitting-and-integration of the atom. That which is powerful enough to integrate split men may be more powerful than that which is powerful enough to integrate split atoms.

This is, at least, the ground for hope and the basis for action of the research producer. He reasons that sufficient self-reciprocity may obtain to prevent great catastrophe, and that, whatever the eventual social actuality, he can make his best contribution by living his own life in an invitation to the widest possible reciprocity. So he places himself squarely in the center of his universe as he knows it and he extends himself through children to people to the widest reaches of universality. In so doing he gains an increment of felt relation to creativeness in people of generations far gone and far in the yet-to-come so that his hope expands beyond the limits of prevented-catastrophe-for-now to the wider reaches of possibility in man's emer-

gent future. This helps his strength and patience, though his main nourishment comes from the vitality of his immediate realizations of living now.

A researcher in the curriculum field, with this orientation, has much to think about in guiding himself into his most vital realizations of living now. Among the major questions uppermost in his mind are likely to be two: (a) What sorts of attitudes do I want to guide me as I do research? and (b) What sorts of problems do I want to work on? The following are suggestions in answer to these questions.

The Producer's Guiding Attitudes in Doing Research

1. In doing research, I do not have to act like somebody who isn't "me"; I can do research so that what I do is more and more clearly mine. This feels good and right.

2. Research is an operation by which I am trying to become a better self-teacher so that my experience can say more things to me, give me more to think about and feel.

3. I can do research just for myself if I want to. However, I can have more fun, if, on some things at least, I can share my experiences with others. When this happens, I am likely to be able to generalize myself faster than if I worked alone.

4. A man doesn't have to publish to do research; he can communicate the shape of his experience in a lot of ways, and often the best way is right on the job with those with whom he associates daily. Publication may help to put one in touch with a wider range of people who are interested in sharing in the way one likes to share; it is helpful to have that company, but it is not the measure of whether or not a person is doing research.

5. There is very little to differentiate a good teacher from a researcher since both are avid inquirers. The main difference is the degree to which the teacher consciously tries to follow what he is doing for the express purpose of benefiting from it. In research, more formality is necessary in the observing, reasoning, preplanning, and reporting. Good teachers can readily become good researchers in this more formal sense. The more sensitive and thoughtful they are, the better.

6. It is no disgrace not to know a particular skill; I need not apologize for that. What would embarrass me in my own eyes would be to forget that my authority has to come from my own handling of myself.

7. A good place to think about doing research is in the middle of some activity where I am trying to do something that is important to me. My research is then my attempt to improve my actions in getting the values I want out of my experience.

8. My research will require a clarification of what I want just as much as it will require a clarification of how to get what I want in the most effective ways. I am to expect to "change my mind" on what it is I "really" value.

9. Teaching is at the very heart of life's most cogent situations. Human behavior is then as complex as it ever gets. Research depends on a willingness to accept the complexity and work within it.

10. The curriculum can be thought of in a number of different ways. One can say it is what teachers do to have things ready ahead of the time they will need them. One can say the "true" curriculum is the experiencing going on in the children. The important point is not the particular definition but the complex of relations that have to go into the whole situation so that the whole is held as a dynamically differentiating togetherness. This is the "reality" faced by the teacher and the proper context for inquiry useful to the teacher.

11. Proof is not a sledge hammer which can drive things into other people's heads; it is a way by which A tries to show B how A thinks his experience goes together in certain circumstances so that A can depend on his experience taking the same pattern the next time the given circumstances prevail. What is proof for A will not be proof for B unless B accepts the pattern as fitting and true for his life as well. Proof is an "illustration," a "suggestion," an "offering"—not a bludgeon.

12. When I hit the "intangibles," as I most certainly will, I will consider them as useful constructions of mine which I can make more useful by (a) specifying what is meant in concrete situations and (b) showing how the constructions fit into a larger system of constructions. To run from engagement with the intangibles is to run from the problem of organizing one's experience.

13. In curriculum building, I cannot stop with a naming of "activities" I feel are valuable for children to do; I have to know what the children are actually experiencing while they are acting.

14. The critical unit is the experience of an experiencer. This means I am not down to basic data until I know what's going on in an individual child's experiencing.

15. Studying behavior is not the same as studying experience. I

can watch a child's behavior without relating the action I see to what I think the child is experiencing.

16. To be sensitive to the experiencing of a child, I have to be able to posit myself as if I were in the center of experiencing of the child. I can then organize postulations of the experience he is having.

17. I can never be the child, of course, nor can I ever know what the full inclusion of his experience may be, but there is no escape for me—my primary data are my "as if" projections.

18. These projections are, of course, within my experience. I do not get outside my experience. Projections are a function of myself.

19. The more "as if" selves I can differentiate in myself, the richer my humanity and the greater the resources for projecting reliable data in the next "as if" case.

20. What is important in "objectifying" is the capacity to hold a form in the center of attention while differentiating it from as many other forms as possible. This makes a form stand out for easy and reliable grasping.

21. Objectivity can be fostered by the way I give my attention to the field in which the form is taken to appear, i.e., by looking at the whole with the intention of seeing the whole while, at the same time, noting as many differentiations as possible within the whole. When this happens, I have a maximum of relations by which to structure forms in the field. My judgments are then more reliable.

22. Scientists who deal with inanimate material use the same basic methods I do; it is only that they can check their "as if" position in their on-going experience with greater ease than I. My compensation is that I am already nearer what I value in life at the point where I get my data. The physical scientist has a long way to go to make wisdom out of his knowledge.

23. I will know I'm off the track if, at any time, my getting of data seems to require that I treat others in ways I would not treat myself. When data can't be reflexive, they're not useful anyway.

24. I will not be a failure in research as long as I'm learning better how to make good use of me. I am my own final judge in this matter.

25. When I seek criticism of what I'm doing in research, I'm asking my critics to tell me how they organize their experience in situations similar to those I present. This is a good sharp way of challenging a sharing right at the point where communication can be most poignant. If my critic does not guide himself by these rules, our ships will pass in the night.

Curriculum Problems of Interest to a Producer

A researcher, with attitudes of this sort, is likely to be interested in curricular problems of the following kinds:

1. How can a teacher tell what a child is experiencing?

2. How can children be given an opportunity to reveal their experiencing?

3. Do children differ widely in the kinds of opportunities they can make use of in revealing their experiencing?

4. How many of these opportunities are provided in the curriculum and how well do these serve each child?

5. Do teachers differ widely in the sorts of cues they habitually use to try to get a projection on what children are experiencing?

6. Can teachers learn to use new cues, or is this a matter of temperament that training cannot touch?

7. How, if at all, are teachers to make use of out-of-class experiences of children?

8. Are there some experiences which teachers should never try to discover in the lives of children? Do these experiences belong to children alone?

9. Teachers sometimes say, "I just can't reach that youngster. I don't know what's going on in him and I can't find out." Does the same child affect all teachers the same way, or is this a matter of "matching personalities"?

10. To "reach" a child, is it more important to have a teacher who is "like" the student in ways of structuring experience, or who "contrasts" with him?

11. In what does "likeness" of structuring or "contrast" of structuring of experience consist?

12. How important is it that a teacher show what he is experiencing so students can see on the "inside" of the teacher's organization? Must the sharing be reciprocal for it to take place at all? Does the age of the student make a difference?

13. What is meant when we say a teacher is able to "put himself across" to the student? Is this the same as saying he is able to "put his subject across"? Can the teacher do the latter and not do the former, or vice versa?

14. Do children differ a great deal in what they are open to in their experiencing?

15. How can a teacher find out what experiences a child is open to?

16. What happens among children when they learn a teacher is trying to find out what they are open to? Are they happy or frightened? Under what conditions?

17. In what connections (relations) do children find their belonging?

18. By what pattern of progression (if any) do children expand the universe to which they feel they belong?

19. What is the relation between a student's finding what he wants to belong to and finding what he is or wants to become?

20. Are curriculums helping teachers to sense and follow children's belongings, beings and becomings?

21. In what situations will children feel free to invest themselves in a course of self-reliant action?

22. Under what conditions do children "lose track of themselves"? What are the consequences for learning?

23. What does a curriculum need to have in it to provide children with ample chances to "find themselves"?

24. When can a child be said to have "found himself"?

25. Is the assumption of a split between man and nature a necessary part of the development of a person, or is it something learned that need not have been taught at all?

26. What is done in school to create such splits or to transcend them?

27. Maybe teachers feel split?

28. To what do teachers take themselves to belong? Is their universe expanding? What do they take themselves to be and what do they see as their becoming? belonging?

29. Does the curriculum provide stimulation for teachers to grow?

30. When a teacher stops growing, can he teach his students to grow?

31. What would a curriculum look like that was designed to do the most to help teachers recognize and develop themselves as creative beings?

32. Perhaps the freedom of the students consists in the freedom of the teachers; if so, how so? If not, how not?

33. What success do teachers have in teaching values they don't believe in themselves?

34. Is it better to have a teacher teach values he believes in, even if

they are "split and wrong," than to teach values he doesn't believe in, even if they are "integrated and right"?

35. Under what conditions will a child recognize a problem as his own?

36. How does a "problem in arithmetic" become a problem accepted by a child as his own?

37. What happens when "the teacher's problems" are not claimed by the students as their own? When the student's problems are not claimed by the teacher as his own? When are problems to be shared and when not?

38. Do children see creation at work and recognize it as such? Is it necessary that they "recognize it as such"?

39. To what kinds of creating are children sensitive in themselves and in others?

40. Is creativity "contagious" among a group of children? If so, under what conditions?

41. When are children better teachers than teachers?

42. To communicate about learning is it necessary that a teacher show himself to his students as a learner?

43. Is it necessary that the teacher also show that he is taking the students as his teacher? Is this a condition requisite to "reciprocity," or is this to oversimplify?

44. In what does "progression as a learner" consist? Is it an increasing capacity to be a self-teacher? If so, is the learner's best model another self-teacher?

45. Some children are said to be able to "operate intuitively" in some of their subjects. Is this the same as saying they trust their feelings and are willing to follow them in determining what is "fitting"? Can there be any learning that is not dependent on a "feeling of fit"?

46. If learning is dependent on sensitivity to fit, what does the curriculum offer by way of aids to teachers in increasing such sensitivity in children?

47. Is there a conflict between increasing sensitivity to fit and increasing capacity to think, use logic, test, objectify? What does the curriculum do to help children get themselves together in their various aspects of structuring experience so that they operate more easily whole than split?

48. What is there about history that makes it like science, that makes it like music, that makes it like language? If we cannot answer this

question, how can we answer the student who asks, as he goes from class to class, day after day, "What am I to do to make all of these me?"

49. Do things have to be "the same" or "alike" to be "one"? Or can an integration occur with "differences"? If the latter, then what is it that unifies? This is the question of what it takes to unify a curriculum; what does it take?

50. In what is one to place the dynamic center of the curriculum? Can you or I work out curriculum problems without recourse to that center? Can a student work out his curriculum problems without recourse to that center? What is it that throws us all together in "the same pursuit"?

In Perspective

If an educational researcher has found a way by which he can use his involvement with curriculum problems to confront himself with problems central to the emergence of his own life-with-meaning, he has found a dynamic for his system and a way by which he can work with soundness and profit to himself and others.

If enough of us were familiar with the way by which "problems out there" come to be "problems in here," then the emphasis in this chapter might well have been upon the trip from "here to there" rather than from "there to here." For many years we have been formulating from "here to there" on the presumption that we knew what we wanted, but so many significant changes have come in the "out there" circumstances that we are now caught with more confusion than our old and presumed wants can encompass. There has to be a period now where we pull back from major emphasis on fixing things out there to resolving things within ourselves so that we come to a level which will allow us again to take the initiative with a conception that promises resolution.

Hence it is that the inner drama is the important story now. We are challenged to transcend what we have been. Life forms have to move in further extension of themselves or they die. Humanity is required to create itself anew and with more included than before. Humanity comes packaged in babies that grow to be persons. Persons are required to create themselves anew with more included than before. This is how it is done in humanity. Education fits at the place where babies become persons.

As Americans, we are proud of our political philosophy which centers the political world in the individual man. We are also proud of our

great economic productivity. It might be that our pride in the former, with all we have had the chance to learn since 1776, would now allow us to see that the self of a man is the center of his entire experiential universe, not just his political universe, and that our pride in the latter would allow us to see that the creativity of a man is the center of his very existence, not just his means of acquiring consumer products. With such sources to tap, there might be a breakthrough in American life. Things might get rolling.

It is this bigger story of need and possibility we have been trying to tell through the contrast of what we have called "the consumer's view" and "the producer's view" of research. By picturing what it means for a researcher to split himself from his data source and what it means to have him together with it, we have tried to show what it means to accept one's self as the center of his experiential universe. By picturing what it means for a researcher to split himself from the source of creation and what it means to be in the midst of creation, we have tried to show what it means to accept one's self as a creative being.

Insofar as the individual researcher can find it in himself to move into a self-creative position, he will find not only a richer fulfillment in his own life, but, in the eloquent reciprocity of creation-among-selves, a richer fulfillment in others which redoubles back on him. There is a great "structured emptiness" in America waiting for those who are big enough and fitting enough to fill her need.

Chapter Eight

Human Relations in Cooperative Research

MATTHEW B. MILES[1]

IT SEEMS TO MOST of us engaged in cooperative research that the "cooperative" part sometimes requires more skill and insight than we can muster. For some the tensions and pressures of taking a research approach in company with others vitiates inquiry so hopelessly that the game is not worth the candle. For most of us—if the existence of this yearbook means anything—the gains of collaborative effort far outweigh the punishments. This is not the place to discuss why cooperative research seems to be relatively more productive than "individual" research[2] in bringing about the changes in teacher behavior that lie at the heart of the curriculum. But there may be merit in focusing on some of the typical problems that researchers meet when they are trying to work cooperatively. These problems must be clarified, diagnosed and resolved before we can expect satisfying, shared accomplishments.

The thesis of this chapter is that good cooperative research in school systems requires careful attention to three levels of analysis. First, since the school is a microcosmic social system, thought must be given to the processes by which *institutional* structures change and/or are maintained. Second, the *personality* dynamics—drives, needs, satisfactions—of participants in a school system are continuously operative as they carry on transactions with others. And third, the way in which people function together in *group* situations has intense

[1] Many of the examples and ideas presented here came from an informal tape-recorded discussion with Ronald C. Doll, former staff member of the Horace Mann-Lincoln Institute of School Experimentation and presently curriculum director at Montclair, New Jersey. In a real sense he is the co-author of this chapter.

[2] See Dorwin P. Cartwright, "Achieving Change in People: Some Applications of Group Dynamics Theory," *Human Relations* 4:381-92, 1951.

relevance for cooperative research, since it is in the small group that both institutional and personal forces appear.

An illustration. To illustrate this thesis briefly, let us consider the case of a cooperative research group of high school teachers, working on the problem of offerings for the gifted child.

Teacher A would prefer to do her own teaching and be left alone. However, she is anxious about her relationship to the principal. She felt very threatened when he suggested she might be interested in working with this group.

Teacher B is actively competitive with the chairman for control of the group and feels that people are not accepting his ideas. He would like to be departmental chairman and sees the group as an avenue to this goal.

Teacher C, the chairman, is uncertain of the principal's support. He is tremendously interested in the problem and tends to give the group a great deal of latitude as it works.

Teacher D, many years in the system, has an extremely low tolerance for confusion, and feels the group's major problem is that the supervisor who helped them start has not supplied enough direction.

Teacher E, new, is a warm but anxious person who has just been criticized severely by a parent about a matter irrelevant to the study. The supervisor has not been to the last few meetings, partly because the principal has appeared very cool in recent contacts, and partly because she feels the group has leaned too much on her suggestions. Her supervisor, the director of instruction, would like a report on the group's accomplishments. The superintendent feels the board has become superconscious of public opinion following a recent closely contested bond issue, which evoked much public discussion of "frills."

Any meeting of these persons would almost certainly be replete with problems. Some predictable possibilities are[3]: disagreement over immediate goals of the meeting; difficulty in staying "on the beam"; a high level of emotional tension. These immediate difficulties, however, may be thought of as *symptoms*—behaviors which appear because of institutional, group-wide and personal forces.

On the *institutional* level, it may be that this school system stands in a basically defensive relationship to the community; that pressures for self-justification from the board are transmitted through the superintendent and director of instruction; that the principal may be considerably threatened by the presence of the supervisor in his school.

[3] Role playing, using these descriptions as briefings, might be used to check these predictions.

On the *group* level, the struggle for leadership and between differing conceptions of leadership may be resulting in a vacuum where many leadership functions are badly needed, cohesiveness is minimal, and extra- and intra-group resources are not being used fully. On the *personal* level, Teacher A cannot be expected to contribute more than slightly to help the group move toward goals, while Teacher E may withdraw or encourage flight into irrelevancies. Teacher D's hostility and Teacher B's vigorous attempts to seize leadership may immobilize the chairman effectively, and the supervisor may feel blocked and confused about the role she should play in the meeting.

All this only suggests the complexity and multiple causation of behavior in a cooperative research group. Effective diagnosis and "cure" of group pathology is not easy; focusing primarily on the *symptoms* (tension, confusion, etc.) without attention to underlying causes is usually unproductive. This chapter aims at illuminating some causes for people who are doing or contemplating cooperative research.

In this discussion, we are focusing on human relations *problems*, as such, on the assumption that the benefits of cooperative research are substantial, and that what is needed is a careful look at barriers and trouble spots. A final section is included on the beneficial human relations effects of cooperative research; the vigorous focus on difficulties should not seduce the reader into assuming that collaborative inquiry is a hopeless proposition from the start.

Where human relations problems come from. We are interested then, in three major sources of difficulty, of which the first two mainly will be emphasized:

1. *Institutional dynamics.* Cooperative research ordinarily involves a small group of persons within a school system who are attempting to conduct inquiry into the effects of their own practices. Such a group usually occupies a role within the total system which has been termed that of "change agent"—that is, its efforts are ordinarily expected to facilitate or improve the effectiveness of the system's operations (even if this improvement is initially limited to the group members' own performance). A "change agent" group attracts and focuses, in a sense, the pressures and counterpressures which are present in the total system. The face-to-face group of cooperative researchers is, then, the *arena* where the dynamics of the larger system manifest themselves, either overtly or covertly. Consequently, breakdowns in cooperative research are frequently symptomatic of breakdowns—potential or actual—in the surrounding institutional context. (It is

important to say that *community* dynamics influence cooperative research too, since the school by definition is a flexibly responsive part of its surrounding environment, and reflects the tensions and pressures of this larger system.)

2. *Group dynamics.* There is another major source of human relations difficulties, however, which would exist even if cooperative research groups existed in a vacuum. These are the forces, structures and processes internal to the research group as a group: conflicting goals, effective decision-making, prestige differences, expression of feeling, resolution of conflict and the like. These internal features are of course inextricably linked with processes and structures in the external system, but nevertheless they are definable and real.

3. *Personality dynamics.* The individuals who comprise the group make a third source of human relations problems. Dependent, hostile, apprehensive, dominative behavior can torpedo the best of groups. We believe, however, that to diagnose a group's trouble as being primarily a matter of members' *personality* troubles is usually ineffectual, for several reasons. It leads to pessimism, hostility or cynical attempts to manipulate (since the offending members can only be really changed through therapy). It encourages scapegoating ("Bill talks too much and he's ruining the group," rather than, "Bill talks a lot and we seem to be ready to listen a lot—why?"). Finally, it avoids attention to careful diagnosis and remedying of the *group*-level and *institutional*-level problems which are usually (except in extreme cases) evoking the undesired behavior.

Personality dynamics are critical for the success of cooperative research groups, both as a source of energy for doing productive work, and as supporting or limiting features relevant to the person's ability to be open and inquiring or dogmatic and closed. Any good research group is good because it supports and sustains member personality, and any failing research group to some degree fails to meet member personality needs. The intent of this chapter, however, is to indicate that the *situation* (institutional, group) makes more difference than we think—and that apparently durable features of persons are frequently quite subject to change and improvement through situational diagnosis, training,[4] and, more generally, a planful approach to learning and change.

The remainder of this chapter has four parts. The first focuses on a

[4] See, for example, Matthew B. Miles and A. Harry Passow, "Training in the Skills Needed for In-Service Education Programs," Chapter XIV, *In-Service Education*, 1957 Yearbook. National Society for the Study of Education, Chicago: University of Chicago Press, 1957.

series of organizational roles (such as that of principal), and their effects on the work of cooperative research groups.

The second section discusses the special internal problems faced by research groups, and the third explores some problems of bringing about change in a functioning school system. The final section reviews some beneficial human relations effects of cooperative research.

The number of panaceas in the chapter will be unusually low, in view of the complexity of what we are considering. The researching group (which is assumed to be composed mainly of teachers, although this need not necessarily or even ideally be the case) is kept in the foreground as much as possible.

The School as an Institution: Some Crucial Role-Relationships

It is useful to think of a school system in a community as a complicated network of forces in a more or less stable balance. This network has at its nodes a number of persons who occupy particular *roles* [5]—superintendent, teacher, parent, supervisor, child, non-parent citizen, consultant—and the day-to-day relationships they have with each other form a kind of pulsating, yet relatively stable whole.

Some physiologist has remarked that the interesting thing about the human body is why it doesn't stay asleep all the time, and it may be that the interesting thing about a school system is why it doesn't fly apart. One reason for stability (and consequently the ability of the school to get its work done in a fairly systematic way) is the framework of interlocking, agreed-upon expectancies which make up the roles necessary to keep the organization going. A teacher, for example, is expected by children to "keep order"; expected by the principal to attend faculty meetings and turn in attendance data; by parents to teach Johnny how to read; by the supervisor to take part in an in-service meeting and so on. The teacher has expectancies for her own role behavior (which expectancies, ideally, coincide with those of others).

In addition, the teacher has expectancies for the role behavior of others—she expects children to appear in her room each day; expects the principal to support her in a discussion with an irate parent; the supervisor to give her advice on a new textbook; the board of educa-

[5] "Role" is used in this discussion in the everyday familiar sense. Technically, we are actually describing "statuses," and referring to "role" as what the occupant of a status position does as a result of role expectancies. See Gordon V. Anderson, "Who Am I?" Proceedings, 1955 Annual Convention, American College Personnel Association, in *Personnel-O-Gram* 9, 3:1-8, June 1955, for a thorough discussion of the idea of "role."

tion to consider teachers' salaries at the next meeting. These particular role expectancies, of course, are only a fraction of those necessary to keep a complicated organization like the school running reasonably smoothly ("smoothly" means expectancies and actual role behavior are not highly discrepant). Furthermore, if the job of educating children is to get done, a large variety of transactions must go on between occupants of these roles—exchange of information, deference, the affixing of responsibility, attempts at influence, and informal sharing of concerns.

Finally, the occupant of each role must have personality needs which are reasonably well met as he behaves in accord with the role expectancies of others—or there will be frustration and damage to the person and the system.

The following discusses four major organizational roles—superintendent, principal, curriculum worker, teacher—as these relate to cooperative research attempts. This discussion is not exhaustive, but tries to select some relatively more crucial relationships for attention as they affect cooperative research attempts.

For each role, we discuss *regular demands*[6] (what the person is expected to do in relation to cooperative research); *complications* (what happens when the system is "out of kilter," under stress or not functioning well in relation to its purposes); and *effects* (how the person's operations affect what goes on in the cooperative research group).

The Superintendent

Regular demands on the role. The superintendent is the chief administrative officer of a school-system-in-a-community. The occupant of this role must be mainly concerned with the effective overall functioning of the system. The enormously complex job of administration cannot, of course, be detailed here, but requires, among other things, that reliable and valid data be constantly fed back from the operation of the system to the appropriate decision-makers. Although most superintendents do not use the word "research" frequently, they rely heavily on many varieties of data (attendance records, bus loadings, census figures and teachers' salaries perhaps more frequently than test scores, ratings of group meetings, and anecdotal records). These data are used in making administrative

[6] "Demand" is used here in the sense of "expectation," "requirement" or "something needed in order to function." This usage, and much of the discussion below on data as a basis for decision-making, were stimulated by Herbert A. Thelen's discussion of administrative process in *Dynamics of Groups at Work*, p. 95-127, Chicago: University of Chicago Press, 1954.

decisions, as well as to facilitate decisions by the board on policy matters.

However, "judgment" is a form of data organization which superintendents perhaps lean on most often. If subordinates repeatedly demonstrate "good judgment" (perhaps another way of saying they have the ability to make shrewd and insightful syntheses of scattered and informal data), then the superintendent develops respect for what is really a high level of organized opinion. Effective superintendency means that informants must be asked, "How do you know that so-and-so is true?" and (characteristically) "Would you put that on paper?" as well as, "How do you feel about this?" Most superintendents, being intellectually honest, do avoid case building and attempts to swing the data in one direction or another. Rather, the superintendent must constantly make decisions as to what *kind* of data and what *quality* of data are really necessary for making this or that administrative or policy decision. Perhaps more acutely than anyone else, he realizes that "we cannot research everything," at least on an intensive basis. He tries at the same time to optimize the dependability of the data—whether they represent "opinion," "judgment" or "fact"—being used for decision-making.

The other major role behavior of the superintendent in relation to research is that since he has responsibility for the operation of the total system, he must authorize (or delegate someone else to authorize) research activities. This means that any research activity that involves expenditure of funds, or a change in someone's job description (such as having released time for work) cannot proceed without his express or delegated approval. In this sense, the superintendent is a "gatekeeper" for the entire system. Independent, clandestine or defiant research activities can take place, of course, but they cannot long endure without administrative approval and support from the top.

Complications. We have suggested or implied above some of the pressures on the superintendent's role in times of stress. More explicity, it may be useful to discuss the pressures originating in the board of education and from the public at large. Superintendents often feel intense pressure from their boards to "produce"—and production in many cases may mean "having it in black and white." One curriculum director in a visit to his board with written outlines of present teaching content—which contained "no statement of policy or philosophy, no research result or anything"—found that the board was unusually impressed with the materials as evidence of progress, even though they had no data on effectiveness of the teaching in-

volved, or even any evidence that teachers were actually using the material. The "on paper" aspect symbolized productivity. The superintendent in such a situation is likely to transmit pressure for immediate, continuing productivity to subordinates, to have a distorted view of what they are actually accomplishing, or to be satisfied with a superficial level of evidence.

However, pressure on the superintendent's role from the public at large—both through direct contact and via the board—may frequently be a force moving the superintendent in the direction of insistence on more precise (and hopefully, more nearly accurate) data. "Attacks" aside, it is increasingly true that as public interest in the schools grows, informed laymen are becoming more skilled at asking the superintendent how he *knows* that Johnny can read, or that field trips are really making a difference, or that early dismissal is good for primary children. There is thus strong pressure for the superintendent to have objective evidence at his finger tips—especially in situations where change in established practice is being contemplated or tried out experimentally. This pressure from the public at large may, of course, operate to encourage the superintendent to be overconcerned with *amount* of data—any data, so long as it has figures and is on paper—at the expense of quality. New enterprises for which number-type data are not immediately available (e.g., the effects of releasing teachers to do cooperative research) may suffer.

In general, the superintendent's "line" role means that he is responsible for making decisions, for acting, for *doing*. The administrator has been defined, only partly facetiously, as "someone who is often called upon to make quick decisions and is sometimes right." The line officer needs the best data he can get, but the pressures (whether real, or projected and intensified) tend to incline him to *decide* without trying to question too much the quality of evidence at hand. The research function in this way tends to be handed over to staff officers, since the line officer is "too busy," and the line attitude becomes one of impatience with the relative slowness with which "answers" become available, and scorn of the "unrealism" of the people who are facilitating the research.

Effects of the role. These general characteristics of the superintendent's role and the pressures exerted on it (which also originate from principals, teachers, children, staff officers, nearby superintendents and outside consultants as well as from the two sources discussed above) may be thought of as resulting in a number of typical *effects* on cooperative research attempts.

One major effect [7] is *anxiety and tension* within a research group, often transmitted from the superintendent through the principal. These feelings may stem from the superintendent's anxiety and impatience with "nonproductive" research undertaking. To a researcher, who enters research precisely because he does *not* know the answer, the question, "When are we going to get to the end?" is difficult to answer and perhaps even irrelevant. To a superintendent, this question often seems highly relevant. Research groups cannot help but feel uncomfortable with the implied demand for productivity. (However, such a demand can be frequently helpful in providing reality limits for an inquiry that might otherwise drag on indefinitely.)

A second effect of the superintendent's role on research groups is that of *apathy*. If teachers regularly say, "Oh, what's the use? He'd be sure to block it," then the pressures on the superintendent's role and the negativistic way he responds to them are sapping anything that might pass for ego-involvement on the part of potential researchers. A corollary effect here is *hostility*, which may and often does appear where the superintendent encourages cooperative research to begin, then becomes anxious and withdraws support or even blocks further work. If teachers have been even minimally involved, the resulting frustration will probably generate aggression—whether it is directed at the source of frustration, other teachers, the principal, children or some other organizational role occupants.

A third effect of the superintendent's operations is the development of a *climate*, a generalized attitude toward research in the system. Whether or not teachers (or supervisors or principals or parents) are likely to respond to work difficulties with an inquiring, experimenting frame of mind is probably largely a function of the way the superintendent's role behavior is perceived by subordinates.

Finally—and this is closely associated with the climate-setting effect—the superintendent's work may affect the *security* of people in the research group. The superintendent may or may not be able to fill a kind of protective function,[8] by saying, "We're studying this problem," to support and safeguard the cooperative research endeavor from pressures from the board or the public at large. Just as members of a small group vary in their tolerance for silences, however, superin-

[7] Any given human relations "effect" is certainly multiply caused. The suggestions below can probably be best used as *hypotheses* in trying to locate the causes of difficulty for any particular situation.

[8] The difference between protective *encouragement* and protective *paternalism* is important and does make a substantial difference in the climate.

tendents vary in the number of times they can say, "We're studying this," before pressures for productivity push anxieties beyond the critical point. Even with regular progress reports, some superintendents—both temperamentally and as a result of the role expectations of others—have strong needs to arrive at a *conclusion* of some kind. The degree to which a superintendent has such needs cannot but affect cooperative researchers' general comfort, willingness to take risks, and imaginativeness.

The Principal

Regular demands on the role. The primary role demand on the principal is that he facilitate the operation of a subsystem, the separate school, within the larger system. He has been delegated responsibility for this, and is authorized to make decisions bearing on the conduct of the immediate school by the superintendent. Unless some public crisis pulls the superintendent into a specific school, the principal is chief. Like the superintendent, as a line officer, he is concerned with effective functioning of a system, but it is a subsystem, which means that his is only one of several subsystems, each with demands and problems.

For practical purposes, the role of the principal is probably the most crucial in terms of getting cooperative research started. The principal has direct contact with teachers, has immediate decision-making responsibility for the school, and is the primary implementing agent for general decisions originating from outside and above his own school. He is the person most likely to become aware of school-wide needs for change (i.e., points at which research may come into play). His authority (which, though delegated, is far more real to teachers than that of the superintendent) means that decisions to proceed with research activity in local schools must involve his approval and support. He is, then, the main "gatekeeper" for research. The principal, like the superintendent, needs data for decision making.

In all these ways, the principal's role, in relation to his school, repeats—with more intensity—that of the superintendent. Although the stakes may be slightly lower, the emotional pressure is probably not less, because the principal has to live closely with the consequences of his decisions. However, unlike the superintendent, the principal has a group of peers—other principals—to whom he can turn for support, with whom he can check the accuracy of information received from above, and so on. (It is true that these peers can also be threateningly competitive.)

Complications. When things go less smoothly than usual, the principal's role has a large number of pressures acting on it. These include most crucially, perhaps, those originating from the superintendent's office, teachers and parents.

Since the principal-superintendent relationship is a "line" or direct-responsibility one, it acts as a kind of transmission belt for many of the pressures on the superior which we have discussed above. To the subordinate, the pressure for "productivity" is probably the most salient one; principals may feel very strong pressures from the central office for "results" in their schools. Furthermore, principals' relationships with physically and organizationally distant superintendents are not usually very realistic or matter-of-fact. The demands of the principal's role may encourage him to *project* pressures for achievement from the superintendent which are nonexistent outside the principal's perception.

If research is being undertaken in the central office group on a system-wide matter, the principal may experience considerable anxiety because of lack of information—"when are the findings going to be reported?"—especially if at the same time he is under pressure from parents or teachers.

Curriculum workers represent another kind of threat to the principal's comfortable discharging of his responsibilities. For example, in a system where a voluntary in-service program was in operation, one school had consistently fewer teachers attending than did the other schools. The real (and fancied-through-guilt) pressures on the principal for improvement resulted in much tension. His tension and hostility went up sharply when a central office person came to the school and interested a larger number of teachers than ever before in a workshop on remedial reading.

Teachers, although they often do not realize it, are another source of pressure on the principal's role in relation to cooperative research. The repeated query from teachers, "When are we going to do something about so-and-so?" (when the problem is defined as being a central office responsibility, rather than that of any specific building) may leave the principal immobilized, frustrated (since he is powerless to do anything) and threatened (since the teachers' demands may reflect adversely on his administrative effectiveness). His only appropriate role behavior in the face of such daily pressures may be that of asking other principals when *they* are going to be finished, or (anxiously) reminding the central office of the problem and inquiring when some kind of cooperative action can be expected.

Parents, too, are a source of pressure. In one community, for ex-

ample, a study aimed at answering the question, "What constitutes a reasonable load for teachers?" found that principals believed that sponsorship of a dramatic production during the year loomed much larger in parents' perception than did rather extensive curriculum revision activity. In this case, powerful parental expectations for the presentation of highly visible achievement opportunities for children placed considerable pressure on principals as they struggled with time allocation.

The case of the parent who, upon hearing of cooperative research activities, is disturbed about reports of "experimentation" and "guinea pigs" is familiar enough to need no elaboration.

Effects of the role. The principal's role behavior probably evokes in his own school some of the same effects mentioned above in relation to the superintendent's role: anxiety and tension, apathy or hostility, the development of climate and the building of security. The first two, following from the impatience of the principal and his tendency to block or gatekeep research activities, are if anything probably more intense than any effects of what the superintendent does.

Beyond this, however, the principal frequently functions in *setting motivation* towards cooperative study. One central office consultant in working with two different schools proposed fact-finding as a way to resolve specific curriculum difficulties (spelling, social studies) and learned that the principals' initial reactions, in staff meeting, were crucial. In one school the principal heartily accepted the idea of cooperative research, threw his weight behind the suggestion, and evoked apparent enthusiasm from teachers which maintained itself in productive work for over a year. In another school the same suggestion produced, not opposition (which might have evoked counter-opposition from teachers) but silence from the principal. Silence from the teachers followed, and over a year later the original issue was still a live one in the school, with no action taken. The principal, then, may act both as a "gatekeeper" or controller of teachers' entrance to the research experience, and as a "model." That is, his relation to the staff, both because of his power and because of teachers' positive or negative identification with him, is something like that of a bellwether.

The principal also helps to set motivations by his attitude toward and information about studies under way. The principal who knows little about what is happening research-wise in his school (either because he simply does not care or because the project is largely initiated

and supported by central-office staff members) is likely to debilitate teacher motivation strongly. Since his knowledge and approval are essential for implementation of changes that may emerge from the study, the teachers' anticipations of his nonsupport or outright veto may cut back sharply on their interest and willingness to work.

Confusion and uneven progress are also characteristic effects of certain of principals' role behaviors. A principal as a line officer may attempt, either steadily or sporadically, to exert control over the members of a research group for reasons not related to the group's purposes. Under these conditions, teacher members are likely to be uncertain of the ground on which they stand, to vacillate in their commitments, and to be anxiously unclear on the direction in which their work is moving. For example, in one school where a voluntary cooperative research group was working, teachers believed that the principal was entering, on their professional records forms, the item, "participated in action research study." They also believed he had attempted to induce some less-active members to leave the group. These perceptions produced much teacher concern and ambivalence between the poles of, "He wants this work to succeed and is giving us credit" and "He doesn't trust us, and I don't want to stick my neck out *that* far."

Another, more constructive, effect of the principal's operations is the research group's experience of *freedom to work*[9] on significant problems. Principals who can make available needed resources—time, working space, consultant help, and *approval*—are usually effective in freeing the group to work on the researchable problems in the school. When teachers do not have to expend energy in difficult relationships with their principal, they can expend it via cooperative research on dissatisfactions they face in their own work. This freedom to work is basically a *freedom to have problems.* Threatened teachers cannot possibly consider, let alone *admit* that there is anything about their own teaching which could be improved. If ego-involved cooperative research is to take place, the climate of the school must be relatively nonpunitive. More than this, the climate must expect, support and encourage the expression of personal inadequacy as a start for inquiry and improvement. Since the principal often plays a "model" role, he probably must be willing to admit inadequacy before teachers can be expected to do the same.

Finally, the principal's role behaviors are probably relatively crucial in *blocking or facilitating change* as a result of the cooperative research

[9] See the discussion by Ronald C. Doll in Chapter Ten of this yearbook for a thorough treatment of this.

group's work. The principal has responsibility for approving new local expenditures in energy and money. Too, he is usually the person who stands between the research group and their significant audiences—other teachers not doing research, the superintendent and board, the parents—and who serves as a kind of communication channel. These authority and communication roles mean that he can block or hamper decisions for change and jam the channels—or facilitate change and keep channels clear. If a particular teacher who is competitive with or threatening to the principal happens to be chairman of the study group, or if (as in our earlier example) the outside consultant is seen as succeeding where the principal has failed, or if the work of the group is seen as threatening existing satisfactions in any significant way—then it is more likely than not that the principal's resultant behavior will hamper the change process. On the other hand, a principal who is able to find satisfactions in a cooperatively managed change process, and who is relatively secure about his relationships with significant figures around the school system can be unusually helpful.

The Curriculum Worker

Regular demands on the role. The third general role to be discussed here is actually a composite. By "curriculum worker" is meant a person with primary responsibility for curriculum development functions in a school system. The role may be defined as purely a "staff" role, but ordinarily has some line functions. Such a person may: serve as a consultant to curriculum committees evaluating and reconstructing the current program; make available extensive curriculum resource materials; transmit data to the central office on the effectiveness of current curriculum practices; develop system-wide instructional policies; be responsible for in-service education programs, either administratively or in a "trainer" role; involve parents in curriculum planning; serve in a monitoring or checking relationship to the work of teachers.[10] These functions are usually filled in relation to more than one, and often to all schools in the system.

Job titles vary, but may include: curriculum director or coordinator, general or special supervisor, director of elementary or secondary education, assistant superintendent, director or supervisor of instruction.

This role has several characteristics in relation to cooperative re-

[10] See, for illustration of the demands of this complex role, *The Work of the Curriculum Coordinator in Selected New Jersey Schools*, Seminar in Supervision and Curriculum Improvement, New York: Bureau of Publications, Teachers College, Columbia University, 1955.

search. It is complicated and often ambiguous, frequently leaving the occupant of the role acutely unsure of where he stands. It views research as a means of accomplishing three simultaneous—and sometimes conflicting—aims: (a) improvement of decision-making about system-wide instructional policies; (b) curriculum development on the system-wide and local level; (c) in-service training of teachers. Finally, it requires the occupant to stand in a primarily consultative, encouraging, facilitating role to cooperative research efforts in local schools. From this point of view, the curriculum worker fills primarily a staff role.

The classical picture of the staff role is that it is concerned with *knowing*, with finding out about something and with placing this knowledge where it can be used by the line officer. Stereotypically, if the line officer—principal, superintendent—is a man of action, the staff officer is a man of advice.[11] The staff officer, not being responsible for the consequences of his actions in the same way that the line officer is, can afford to take a year to find good solid answers to a question which is important to him or to people with whom he works. His essentially consultative role may free him from the pressures of decision making, but may also mean that his aspiration level during the planning stages of research is too high, given the resources and time available.

Complications. Data on the results of newly changed procedures and operations, and on the outcomes of in-service training programs are often seen as essential by the superintendent, especially if he has had to "sell" the board on appropriation of funds. The curriculum worker may find himself feeling very anxious because he is unable to say with rapidity whether the new social studies guide is helping any (or is even being used); whether the art workshop was worth the investment for the consultant; or whether the curriculum study group on junior high school science is producing anything that looks workable. This anxiety, even though it is often fairly realistically based on a close working relationship with the superintendent, is still anxiety. The curriculum worker thus finds himself being pressured for, and giving, opinions in matters where he would infinitely prefer to suspend

[11] This picture is, of course, heavily oversimplified—many curriculum workers have line responsibilities—in fact could not function without, say, the power to call meetings. Many line officers—e.g., elementary principals—have staff responsibilities. The classical line-staff model is, moreover, open to some question. See Douglas M. MacGregor, "The Staff Role in Human Relations," *Journal of Social Issues* 4:5-22, Summer 1948, for a creative discussion of ways out of the dilemmas posed by the usual line-staff conception.

judgment until more nearly solid data become available. This is in part a problem of scheduling research with some realism as to time and energy limits.

If line and staff people can keep in good communication during the planning stages of research, it is much more likely that answers will be forthcoming when they are needed for decision-making. Line officers will not get impatient with an eight-month project if it is planned to start eight months ahead of the time when decisions must be made from the data. Curriculum workers will be less frustrated if they can learn not to suggest that certain types of data can be gotten in two weeks. Lacking this realism, research in schools will languish, or not be closely related to the crucial decisions which need making. And even with good planning, the pressures on the curriculum worker may still make him feel as though he is being asked to justify the existence of his job over and over again.

Other pressures on the curriculum worker emanate from the principal's role. We have indicated above how threatened a building leader can be when he sees successful cooperative research as the result of a curriculum person's work. Principals who are threatened in this way may respond by rejecting the curriculum worker, by hamstringing research through failing to provide released time and facilities, or by "sealing off" the work of the research group from the main stream of the faculty's concerns.

Even if a principal does not feel threatened and is interested in supporting and encouraging cooperative research, however, he may face very real problems in competing for the available time of teachers. Faculty meetings set up to gather data or report research may be swamped as well with pressing administrative problems. Finally, if principals are receiving heavy demands for productivity from the superintendent's office, they are likely either to transmit this pressure to the curriculum worker directly (inquiring anxiously about progress), or indirectly through attempts to control the research group's output. This leaves the curriculum worker with the difficult task of maintaining rapport with the teacher group and encouraging productivity, without being seen as usurping the line or in-service development functions of the principal involved. If threat is high, communications will probably be distorted and further hamper the working relationship between principal and curriculum worker.

Teachers, too, exert pressures on the curriculum person who is working in a school with them. In the early phases of cooperative research, before research problems and stable group structures have become clear and evident, teachers may want a good deal of support

and answer-giving from curriculum workers. This want may be relatively realistic, or driven by dependency needs. In either case, the curriculum worker may feel threatened, especially if he is not secure with the content of the problem, or with cooperative research procedures. Since live problems inevitably mean some insecurity, and since most curriculum people do feel inadequate in some respects in regard to cooperative inquiry, teachers' demands for assistance can induce real pressures on the curriculum worker's role. Dependent, unrealistic demands are almost inevitably intermixed with counter-dependent or rebellious behavior on the part of teachers. The curriculum worker is then faced with the attractive option of withdrawing (since "they don't know what they want") as versus the relatively more painful one of staying with the situation and working through to an effective helping relationship.

Another pressure from teachers appears when the curriculum worker is responsible for in-service training and is encouraging cooperative research as a means to that end. If the data getting is also part of a system-wide effort to get facts for decision making, then teachers may have a conflict between producing data "for the central office" and following their own needs and interests. Such a conflict may be transmitted to the curriculum worker as resistance to the system-wide project ("When are we going to teach children?") and/or apathy regarding the local project.

Effects of the role. The curriculum worker's operations can frequently lead to *threat and resistance* in researching groups. These negative reactions appear from at least three sources. First, the usual mixture of line and staff functions in the role may induce caution and unwillingness for teachers to risk experimentation (since admission of personal inadequacy is extremely difficult in the presence of a person who has informal or formal power over you). Second, if the curriculum worker *is anxious* about his own role, about pressures on him from above, or about difficulties with the project itself, this communicates very rapidly. For example, this tense declaration by a supervisor: "We want you to be working on problems that really concern you. There is no stigma attached if you decide not to participate in this action research group," may communicate as: "I want this project to be successful, and dabblers had better stay out. I'm worried that some of you will feel there is a stigma for nonparticipation. Maybe it *is* a stigma, at that." Finally, a third inducer of resistance and threat is the use of strange language ("bench mark," "instrument," "hypothe-

size") by curriculum workers. Even the word "research" appears to be sufficiently threatening to many teachers that it is better to say "let's find out" or "let's get some facts." New words *are* necessary if new concepts are being used, and the threat they evoke is part of resistance to learning. But curriculum workers who are not conscious of what lies behind feelings about "jargon," or who use words as a way to enhance their own status or *expertise*, are headed for difficulty with research groups.

Uneven accomplishment is another effect in research groups which can frequently be traced to what curriculum workers do. The nature of any helping relationship is such that dependency (and counter-dependency) problems can easily become central. If the helping person cannot accept this, or is only intermittently aware of what is going on at the emotional level, or oscillates between over-helping and under-helping, then the research group can only proceed in fits and starts.

The *frustration* in many research groups stems from lack of skill in building the kind of cohesive group which can support the indeterminacies of cooperative inquiry. This is bad enough, but the curriculum worker who in addition stimulates impossibly high aspiration levels (as evidenced in oversophisticated or complex suggestion making) is compounding the problem instead of helping to work it through.

Feelings of *security* and a climate of *permissiveness*, although they probably come centrally from the superintendent's and principal's attitudes, follow too from the way the curriculum worker fills his role. Line officers' support and encouragement are probably a necessary but not sufficient condition, and the attitude and behavior of the immediately-helping person powerfully affect research group atmosphere.

Finally, feelings of *accomplishment* and productivity in research groups are probably closely related to the skill of the curriculum worker in (a) making his own competencies and knowledge available to the group as resources; (b) helping to make progress and achievement visible to the group as they work; (c) providing needed training in skills of group work and research techniques as appropriate; (d) encouraging and facilitating the growth (see below) of a cohesive, systematically-working, self-diagnosing-and-improving research group. The much-beset curriculum worker may well wonder if he is equal to all this. He probably is not, if he is not willing to be experimental in approaching his own role as a helper in research efforts.

The Teacher

Regular demands on the role. The primary expectation for the teacher's role is that he must provide and maintain an effective learning experience for a given number of particular children—in class or out of class. The teacher usually has a considerable amount of autonomy within the local limits of this general prescription. The teacher is responsible to the principal (and/or a supervisor) for effective execution of his role's demands. He uses curriculum workers as resources, maintains a peer relationship with other teachers, and stands in a frequently ambiguous and undefined relationship to parents of the children with whom he works.

The teacher as a professional is expected to maintain competence and even to "grow" in service. Increasingly, too, the teacher's role requires participation in decision making about the content and organization of learning experiences on a school-wide basis. Finally, the teacher (as, in part, a "line officer") is expected to carry out administrative decisions, and to gather and forward data necessary for administrative and curricular decision making (e.g., attendance, requests for supplies, results of various tests). In short, teachers usually have much more expected of them than they feel they have time to do.

It seems increasingly true that teachers are expected to be doers of research. Cooperative inquiry is coming to be seen as an appropriate means for supplying the data needed for school-wide administrative and curricular decisions; for satisfying the general role requirement of in-service growth; and for (incidentally) improving the quality of teaching.

Complications. The primary pressure from the principal's role on that of the teacher is for productivity—effective and smooth functioning of the school as an organization devoted to bringing about change in people. The major research-relevant pressure is that teachers must produce reliably and promptly a host of data needed primarily for administrative decision making, and secondarily for the improvement of learning experiences. Teachers in this sense are not expected to be investigators, in terms of *finding out*, but more simply enumerators and recorders. It is difficult for them to feel that such data-gathering is closely relevant to teaching. On the other hand, if the central office is making demands for data on *learning*, the teacher will experience pressure to engage in fact-finding about matters closer to what is "supposed" to go on in classrooms. If this demand is made by a threatened principal, then the teacher will probably be threatened too, since he feels as though it is *my performance* (and not the cur-

riculum, or the materials, or the children) which is being questioned. If the demand comes, on the other hand, from a role occupant who is relatively unthreatened by the pressures on *him* to produce data, then it may be that the problems prompting inquiry can be attacked on their merits. Too, if "productivity" or "smooth functioning" is defined by the principal as including or requiring a cooperative research approach, teachers will be more likely to build this approach into their roles.

Some pressures on teachers from curriculum workers interact with pressures from peers. To illustrate the complexity here, consider the case of Teacher A, who began an action research project to study her own teaching. She had the support and encouragement of Supervisor X. Suppose that X suggests to A after awhile that Teacher B, who teaches the same grade in the next room, be involved to make this a cooperative project. We then have some possible negative perceptions:

TEACHER A: The supervisor is taking this away from me. Is she punishing me? Does she think I can't handle this by myself? Does she like B better than she does me? Am I supposed to help B, or tell her what do do, or just encourage her, or what?

TEACHER B: A is the supervisor's fair-haired girl. Who suggested that I be involved, anyway? Why was I chosen for this? Does X think that I don't have enough to do, or that I'm not growing enough to satisfy her? Maybe X thinks I have a lot to contribute to this—maybe more than A does. Maybe I should take more initiative than A in this thing. But how will A react if I do?

In such a situation, X may simply have thought that getting more people to work on the problem would be a good idea. She is likely to be astonished when A and B come to her separately to inquire about her intent and voice their worries indirectly. She may be unable to recognize the forces and pressures at work in the situation. If she does perceive them, she may argue them away by denying the intents attributed to her, or by terming the teachers' views "distorted." The major point here is that the role requirements of the supervisor and the teacher tend to intermesh in a manner that generates such perceptions; it is not fundamentally a matter of individual intent or motivation, although these enter too, of course.

Peer pressures operate in other ways on the teacher's role. Members of a cooperative research group may attain "fair-haired" status with remarkable rapidity and attract considerable hostility or rejection from nonresearching teachers. In some cases such a group may be literally boycotted or walled off from any kind of working or informal rela-

tionship with their peers. "Fair-hairedness" comes from the imputed rewards which researching teachers are getting from the principal, a curriculum worker or an outside consultant. It is not too fanciful to refer to the model of sibling rivalry to help explain this, particularly where the primary feelings by nonresearching teachers are those of envy and jealousy.

Where feelings seem to be primarily those of threat and resistance, on the other hand, it is possible that a "restriction of output" operation is at work. Teachers, as harried as they are, do have implied group standards as to how much work is acceptable in the situation. Any innovation, such as a request from a cooperative research group for some data, which is perceived as (a) temporarily requiring more output, (b) threatening to raise the school-wide output standards, will be resisted powerfully.

In one school, on the other hand, where there were tacit standards for cooperativeness and continuous in-service growth, some teachers who were actually indifferent about the work of a research group entered it because they "did not want to seem uncooperative" to other teachers. Here the pressures were in the other direction, but teachers still were moved to retain and enhance their membership in their peer group.

Parents are also a pressure source. One elementary school parent group went on the warpath with a request that the staff produce subject matter outlines for all grades, and do so by a certain time. When under this duress teachers drew up outlines (none had been existent), parents reacted with, "How do you know that what you're doing in social studies is what we *ought* to be doing?" The faculty response was couched in terms of tradition, and "what good teachers have been doing with boys and girls here for 30 years." As might be expected, the parent response was, "Maybe what was good thirty years ago isn't good any more." The level of threat and tension in the staff can be imagined; it was sufficient to immobilize them almost completely.

This kind of pressure from parents, however, does have considerable potential for support of cooperative research ("How do you *know* . . ."), and may well be a cue for involvement of parents in study.

Teacher motivation problems. We have outlined above the effects of pressures from three school-system roles on teachers in the cooperative research group. It may be useful here to review some basic problems of motivation and interest which teachers face in entering a cooperative research relationship. Reasons for deciding to participate must probably be considered on at least four levels.

Level 1 may be thought of as the *official*, public, correct, professional reason. This kind of motivation is genuinely widespread among teachers. Teachers *are* professional, they hope to improve what they are doing, they need and want answers to knotty questions concerning their own work. The advent of depth psychology has led many to question motivations like "altruism" and to feel that the "official" motive must be masking a congeries of unlovely, unadmittable ones. Many school people habitually impute Machiavellian or evil power-striving motives to colleagues. Such attributions, however, are probably more a comment on the climate of the particular school than they are on the personality of the perceived "Machiavelli" (*or* the perceiver). Attempts to empathize, sit in the teacher's seat, nearly always lead one to regard motivations as honest and direct.

This does not deny, however, the existence of motivations at Level 2, which might be called the *tactical-strategic* level. Thus, if my principal is seen as pushing a particular research project, it wouldn't hurt to be involved, even though he has said it's voluntary. Or, if a teacher friend is going to participate, this makes it more likely that I will want to take part too. Or, if a particular curriculum officer (who in the past has supplied much support and encouragement) is working with this project, then it makes good sense (and I *want*) to participate. Teachers are fully aware of this kind of sensible, natural response to the everyday pressures of life in an organization, and can discuss their reasons with friends or confidantes.

Some reasons for doing cooperative research, however, are very dimly seen by the teacher himself. These might be lumped under Level 3 and called *preconscious*. For example, when the principal mentioned above is pushing a research project, one particular teacher may be nearly unaware that his own characteristic role in faculty meetings is that of a "yes man" to the principal. He may feel that the principal's ideas are excellent and that they touch a kindred chord. He does not realize how frequently he agrees with the principal, or even that he changes his own stated position to do so. He probably does not realize, either, how frequently he jumps in to speak after Teacher C, who also supports the principal. And he may be only partly aware that his own style of behavior in groups encourages other teachers to see him as conciliative and harmonizing, even at the expense of fruitful disagreement and discussion.

Under good conditions (such as the permissive climate in a group devoted to studying and improving its own ways of working), this teacher can become aware of these preconscious behaviors without too much threat and resistance. He simply never *realized* clearly what

his own behavior in group meetings was like—his motivations were outside immediate awareness. But he *can* realize what they are like and accept them.

The fourth level of motivation may be thought of as *unconscious.* In the example above, the teacher would probably deny, perhaps with some heat, that the principal reminds him of his own father, or that his own childhood struggle to be the "best one" has any relevance, or that he has any sexual feelings toward the female supervisor who is so friendly with the principal, or that he is actually deeply hostile toward the principal. This kind of "reason" for entering cooperative research is so intimately bound up with the central structures of personality that really clarifying and discussing it with others nearly always means that some kind of personality change will result (as in therapy). Amateur analysts on teaching staffs are often quite ready to attribute or impute this level of reasons to others, and this leads to blaming and scapegoating, since after all, "we can't do anything about such a basic problem, can we?"

More relevant to the realities of organizational life is the willingness to set conditions which permit all four levels of motivation to operate without the making of invidious comparisons between levels (e. g., "The *real* reason he doesn't want to be in the group is . . ."). A principal or supervisor who wants to set an effective climate at the start for cooperative research probably needs to be rather matter-of-fact (e. g., "I recognize that there are other things we have to do and this is just one of several. If you feel this might be helpful, let's go ahead, maybe meet next Tuesday at 3:30. If other things are pressing, it's better to be working on those.").

Opportunities are also needed (as in departmental or friendship groups) for informal, relaxed exploration of what entering the research group will mean. Overemphasis on *real interest* in cooperative research as such is probably not helpful (since nonparticipators will feel guilty if they are not "really interested") and participators will feel guilty when the inevitable lags in interest and productivity come. However, emphasis on cooperative research as giving promise of helping with *felt problems,* the difficulties which are concerning people here and now, is helpful. Such an emphasis symbolizes attitudes of trust, willingness to accept stated reasons and permissiveness for the exploration of unstated reasons. An optimistic-realistic approach like this can take account of motivation at all four levels.

If realistic attitudes are taken toward teacher motivation for research, one must expect varying amounts of motivational intensity. Given an operating research project in a building full of extremely

busy teachers, there will probably be: (a) a small group (four or five or less) who are as involved as any teacher can be; (b) a somewhat larger group who are involved enough to want to know what's happening, and to come to meetings when they can; and (c) the remainder of the staff who are not involved, for many different reasons. Here again the avoidance of comparison-making is important, as is careful maintenance of relationships between these three subgroups.

Other Roles

We have discussed in some detail a few selected relationships between superintendent, principal, curriculum officer and teacher. We have explored in each case the problems these relationships carry for teachers taking part in cooperative research. It should be acknowledged that many important role-relationships have been omitted. The mutual expectations between occupants of the roles we have picked out and those occupying such other significant roles as *non-parent citizen, outside consultant,* and *school child* are certainly influential in the total field of forces and cannot be ignored. However, the number of possible relationships is very large (the eight roles we have mentioned, for example, have 28 possible two-role relationships (such as principal-teacher), and 220 other possible relationships involving more than two roles at a time). The priority question in diagnosing any inter-role situation is: What are the crucial relationships in this situation?

The Research Group as a Group

Introduction

We have been indicating that forces from the school system at large influence vigorously what goes on within the cooperative research group. It is important, too, to consider "internal" problems, those difficulties which any group, regardless of context, must develop resolutions for. This is not the place to attempt to encompass the growing stockpile of literature dealing with the dynamics of small groups,[12] but it may be useful to discuss some essential features of small groups, identify some special demands which research groups

[12] The interested reader is referred to the excellent annotated bibliography of 584 titles (restricted to original contributions to the science of small groups since 1900) assembled as an appendix to A. Paul Hare, Edgar F. Borgatta, and Robert F. Bales, *Small Groups,* New York: Alfred A. Knopf, Inc., 1955.

are likely to encounter, and outline the need for self-diagnosis and improvement of functioning by research groups.

How Groups Work[13]

Goals. Like any small group, a research group has *goals,* or foci of tension around which group members are organized, and toward the resolution of which the group moves, e.g., "How can we help the gifted?" "We need to find out what happens to our drop-outs." "This report must be in draft form by Wednesday." The goal(s) may be more or less clear, and more or less accepted by members.

Cooperative research requires that goal setting be cooperative, if members are to work on involving, meaningful problems. This is never an easy task, since it involves synthesizing a wide variety of personal needs and fitting these to the demands of the external environment. Furthermore, the nature of research means that group goals are often initially extremely vague, consisting only of unfocused, unresearchable dissatisfactions in a relatively unstructured social field ("How can we build a curriculum that is consistent with children's needs?"). Educational research, furthermore, often deals with extremely complex problems, where many variables are working at once; research goals are often hard to clarify. Many cooperative research groups bog down seriously at this point, especially if the experience of locating and synthesizing goals is new or threatening to people.

Procedures. A research group also has, like other small groups, a set of *procedures* or activities by which it moves toward accomplishment of goals, e. g., going around the table for suggestions, "free-wheeling," building an agenda and using it, classical problem solving (Dewey). These procedures may be relatively anarchic or systematic, they may vary in clarity and acceptance by members, and they may vary in appropriateness to the nature of the goals the group has.

Cooperative research implies that group procedures are to be relatively systematic. Furthermore, a particular method, scientific method, (rather than tradition, revelation, or arbitrary decision) is thought of as being appropriate for cooperative research. Many, many school people feel inadequate and threatened by "research" as a procedure, and even those who feel relatively comfortable in conducting individ-

[13] This formulation is influenced by Murray Horwitz, "The Conceptual Status of Group Dynamics," *Review of Educational Research* 23:309-28, October 1953, a systematic review of 133 studies, most appearing since 1945; and by Dorwin P. Cartwright and Alvin F. Zander, *Group Dynamics,* Evanston: Row, Peterson, 1953, a selection of readings in research and theory.

ual research boggle at the difficulties of keeping group procedures orderly and scientific as problems are being solved.

Cooperative research groups, because they face considerable indeterminacy initially, and because they may lack the skills to reduce that indeterminacy rapidly, need to give special attention to the development of effective procedures. Good procedures are a primary means to *success experiences,* which are extremely important for the extended work (a year or more) usually required in cooperative research. That is, members must feel recurrently that they are experiencing movement, that something specific is happening to help solve the original problem, that "we are *accomplishing* things"—if motivation for continued hard, puzzling work is to continue. Surprisingly, many leaders who take much time as a matter of course to clarify and delimit group goals pay almost no attention to the clarification and delimiting of procedures, and assume that just encouraging the group to start talking is sufficient.

Interpersonal structures. Like any group, a research group has a number of *interpersonal structures,* or frameworks which permit, encourage or inhibit movement toward goals via specific procedures. These structures, which serve to differentiate subgroups and members, may change relatively slowly or rapidly, and be more or less visible to members. Examples of such structures are: *functional role structure* (who is carrying out what jobs in the group, such as summarizing, harmonizing, attacking, encouraging? how widely or narrowly are these functions distributed through the members of the group, including the leader?); *communication structure* (who talks to whom? do certain kinds and amounts of information go through some people and not others?); *power structure* (who is able to influence whom through blocking or aiding the satisfaction of needs?); *friendship structure* (who likes whom, and who dislikes whom?).

The initial indeterminacy in research process means that there is a premium on the early development of stable group structures for communication, leadership and membership, power and friendship. When highly motivated group members feel that they have little research skill or experience, it can be highly frustrating and anxiety-provoking. The need for internal stability under these conditions is very acute.

But beyond the need for security in facing the unfamiliar with unfamiliar tools, the research group must have stable structures because it is a "change agent" group. It is part of a larger environment, which it is set up *to change* in one way or another (see below). An

effective change-agent relationship with the surrounding environment is extremely difficult if internal structures are not stable. (e.g., "we have to have our own house in order before we start involving the others.")

Standards. Like any group, a research group develops *standards* or norms of behavior as it moves toward goals, using procedures which are influenced by internal structures. These may be explicit or implicit, relatively specific or general, and have sanctions (such as disapproval) attached to deviant behavior as a means to reducing it toward uniformity. It is as if the group were saying, "We don't do this," or "We *do* do this in our group."

Research groups can probably function best with certain kinds of standards. Some of these may be: objectivity and respect for data (the very heart of the research process); thoroughness (a supporting standard for the previous one); permissiveness (since the group is cooperatively oriented, it is very important to have full and thorough expression of feeling about such matters as group goals, group procedures, and the nature and effectiveness of the group's structures); legitimacy and desirability of focusing on our own group process problems.

Such standards do not come naturally, and may in fact actually conflict with other, pre-existent standards in the school system. Group members are then faced with building a situation where these standards have "teeth in them" and function to help the group as it works. For example, research groups need to develop such specific standards as saying, when people make general assertions, "What's the evidence?" and, "Are you stating that as fact or as a hunch?" These are probably learned mostly from "models" (e.g., a helping curriculum worker), and are reinforced through success experiences when the standards are in force.

Cohesion. Any group also has the general property of *cohesion.* It "hangs together," has "we-ness," more or less, as a group. Membership in the group satisfies needs for goal accomplishment ("this group gets me what I want"), and association with others ("I like this group as a group"). Cohesion may also be induced by pressure from outside (e.g., a consultant's criticizing a questionnaire built by a group at great cost of time and energy).

Cohesion in research groups probably needs to be high enough to support group members through the inevitable periods of confusion, vagueness, apparent nonproductiveness and frustration which characterize research process. However, cohesion may be so high as to

exclude or reject nonresearchers psychologically, or produce a marked in-group—out-group feeling. This hampers the general role of the research group as innovator and encourager of change. Beyond a certain low point of cohesion, however, a research group will simply fall apart in the face of difficulties.

Emotionality. At any point in time, any group has a general climate or atmosphere, a common mode of emotional response. Groups may act as if the only thing to do in a particular situation were to fight and express aggression. At other times the dominant emotional tone may be one of warmth and intimacy between members. Other typical emotional modalities are those of dependency and counter-dependency (rebellion), and flight, or attempts to run away from the problems facing the group. Basic emotionality patterns are a product of member personality needs and the degree to which goals, procedures and interpersonal structures contribute to blocking or meeting these needs. The expression of emotion is usually carefully regulated by group standards.

The uncertainties and frustrations of cooperative research often mean that aggression and fight—whether overt or not—figure prominently. Dependency feelings are probably even more central. Some research and much experience suggest the importance of developing an emotional tone that is warm and supportive, and this is probably especially true for the cooperative research group. The essential is that the dominant emotional tone at any point be as appropriate as possible to what the group is trying to do.

Group maturity. Finally, any group may be thought of as being in a particular *stage of group development;* it is more or less mature as a group. It is more or less successful at getting a job done; it is more or less successful at meeting member needs for association and approval; and it is more or less able to be self-diagnostic and to improve itself continuously as a group. Its structures and processes (i.e., changes in structure) are more or less orderly and adequate to the demands facing the group from inside and out.

Group growth takes time and energy.[14] The further along a research group can be in its development as a group, the more adequately it can handle the many problems facing it. A group which cannot set goals and procedures effectively, which has unstable internal structures, which is unsatisfying and threatening to its members, which remains dependent or which scapegoats members when difficulties

[14] See Matthew B. Miles, "Human Relations Training: How a Group Grows," *Teachers College Record* 55:90-96, November 1953.

appear is bound to fail in any task; the more so in a relatively new, threatening and difficult task like cooperative research.

Group Self-study

Since very few groups have the opportunity to become highly mature as a group *prior* to initiating a project, sensitive self-diagnosis and training are extremely important for cooperative researchers. The issue then becomes: how can groups study their own difficulties in flight, as it were, and supply needed skills—rather than: how can groups be perfect before they meet challenges? The image here is of a growing, developing group which can tackle its difficulties experimentally as they appear. Practically speaking, quite early in a research group's life the members should have success experiences with self-training, with analyzing and discussing the problems they are facing within their own group. Matter-of-fact questions, such as, "What's blocking us?" and "How did we feel about that last half of the meeting today?" and "What's making it so hard for the people on this end of the table to participate?" need to be asked and answered.

Research groups which are wholly preoccupied with content and cannot "take time" for process analysis will probably be severely hampered as they try to proceed. The group standard needs to be established very early that analysis of the research group's own workings is not a kind of tabooed cultist operation, but essential for group survival. The particular training device being used—oral evaluation, group observer, post-meeting reaction sheets, or whatever—is not important. It is important that group members see the analysis of group processes as a legitimate and (occasionally) crucial way to spend time.[15] Research groups do have special difficulties—unclear goals, new or threatening procedures, and devotion to *change* rather than to maintenance of the existing order. A new research group will probably be in trouble if it cannot stop to study and analyze these process difficulties. It is important to say that this *training* aspect of cooperative research groups must take in all the relevant skills needed by group members—"how to analyze unstructured data" as well as "how to build a good work agenda"; "Why are we so vague in our hypotheses?" as well as "Why can't we stay on the beam?"

[15] Here again it is inappropriate to discuss in detail ways of improving group operation through self-study and diagnosis. The reader is referred to the thorough review by Kenneth D. Benne and Grace Levit, "Helping Groups to Improve Their Operation," in *Review of Educational Research* 23:289-308, October 1953, and to Miles and Passow, *op. cit.* The latter treatment suggests principles of training and lists many specific training activities usable by cooperative research groups.

The human relations problems and demands outlined above suggest that the task of effective cooperative research is one for superhumans, or social psychologists, or saints. We believe it is none of these necessarily (although it may be a little of each). Cooperative research does demand—and repay—more careful attention than is usual to the improvement of intragroup processes.

Problems of Bringing About Change

The promise of cooperative research is precisely that it offers a method of educational change that produces more lasting results, is less subject to erosion and backsliding, and is sounder ethically. Cooperative research is even, if you will, *safer* than other ways in current use (tradition, fiat, imitation, expediency, anarchy, speculation, *et al.*). However, institutional change is never simple or easy even if people agree that cooperative research is the way to do it. This section is devoted to some characteristic problems in cooperative research as an instance of planned change. As in earlier sections, the treatment is nonsystematic and selective, and the reader must look elsewhere for a more nearly comprehensive picture.[16]

The Research Group as a Change Agent

Even though the members of a research group avow the sole purpose of "improving our *own* teaching," it is ultimately true, even in faculties where internal communication is minimal, that consequent change in the surrounding system is a potential or actual fact. A subgroup of a social system cannot have a significant experience without its affecting the other parts of the system. These effects may support or counteract the changes within the research group, but the effects are there.

Essentially, a research group in a faculty plays the role of innovator, change-agent or risk-taker for the larger group. This role often encourages people within the research group to feel Messianic, highly insecure, guilty, inadequate, or expectant of attack as they consider themselves in relation to the nonresearching group. The nonresearching group may share many of these feelings, but from a different

[16] For example: Kenneth D. Benne and Bozidar Muntyan, *Human Relations in Curriculum Change*, New York: Dryden Press, 1951 (wide selection of pertinent readings); and Hubert S. Coffey and William P. Golden, Chapter III in National Society for the Study of Education, *op. cit.* (systematic treatment of problems of bringing about change as viewed from the personal, small-group and institutional levels).

perspective: we *aren't* doing anything new. Thus, instead of a Messianic feeling, there may be blended virtue, complacency and guilt; feelings of inadequacy are clothed with defensive pronouncements of adequacy; and feelings of hostility (tempered with curiosity and envy) toward the researching group may become quite central. Emotions like these tend to reinforce the original conditions which generated them. The research group becomes even more tightly knit —its members driven together, in a sense, by their own insecurity and the hostility they receive from the nonresearching group. This increasing cohesion encourages nonresearchers to see the research group as "a clique to which I don't belong" and adds more hostility to the fire. And so on.

Reversing this development calls for two kinds of corrective action: (a) using the *informal* channels of relationship in the system, so that insecurities and hostilities can be loosened up and worked out in the teachers room, over coffee, or by the water fountain between classes; (b) restructuring of the formal work relationships to eliminate the dichotomy between the researching and nonresearching teachers.

One way to do the latter is to encourage the development of *several* different kinds of faculty groups: Group A, which is researching on reading; Group B, which is not researching, but preparing a social studies guide; Group C, which is not a group, but a collection of individuals taking in-service courses at a nearby university; and so on. If in addition some people can belong to more than one such group, they serve as bridging members to interpret and clarify to group members what is happening in the "other" group. The bridging relationship induces conflicts of loyalties, competition for time, etc., but does reduce the in-group—out-group dichotomy considerably. Curriculum workers and principals usually perform the bridging function and can help to avoid the development of covert perceptions such as, "They're doing *research*, and what we're doing isn't really worth while."

Resistance

Attempts at change in a system inevitably evoke resistance to change. It is as if the larger system were defending itself, trying to maintain the previous equilibrium of role expectancies and role behaviors. Resistance to the efforts of a research group, even when no overt attempts are being made to get others to change what they are doing, usually takes the form of comments such as this:

"What's the use?" "We've been over this for the last 20 years, and where has it gotten us?" "I did something just like this three years ago—it isn't really new." "Why don't you talk English instead of that jargon?" "It all seems terribly vague and confused to me." "It's OK as far as theory goes, but. . . ." The expression of feelings like these often encourages research groups to retreat, or to become defensive and hostile, especially if they are also beset with internal process problems.

Such feelings, however, usually symbolize resistance, and in effect show the research group that its work is having an impact on the surrounding context. The demand on the research group is exactly that it must *not* be stampeded by such expressions of feeling, and/or join in them. Clearheaded diagnosis of the reality situation is needed.

Resistance may be thought of as similar to *fever* in an organism. Fever is not undesirable in itself but serves as an indicator to show that the body is at work, is mobilizing to move toward a new equilibrium. The physician does not become angry at the fever and does not complain that it should not exist, or that the patient is deliberately and willfully producing the fever. If the fever becomes extreme, the physician may work to reduce it directly, as with ice packs, but most frequently he attempts to go to the cause of which the fever is a symptom.

In the same way, a research group needs to marshal objectivity and attention to underlying causes. When expressions of resistance appear, the "diagnostician" role should become uppermost, so that the group tries to analyze the situation and discover the underlying forces which are evoking the feeling. An extremely useful tool for making diagnoses is *force-field analysis*,[17] which involves arranging in a diagram the helping and hindering forces affecting change. Analysis often reveals the source of resistances and helps distinguish fundamental from superficial ones. Once barriers have been reduced or removed, existing positive motivation may bring about substantial, relatively tension-free change.

Finally, it is important to remember that resistance is usually expressed overtly through the informal organization of the school, and may need to be worked with on that level. In one school, teachers said to each other *sub rosa*, "Well, we're going to have to

[17] See, for example, "Improving the Processes of Leadership Training," by Hubert S. Coffey and others, *Adult Leadership* 2:15-16, June 1953; Kurt Lewin, "Studies in Group Decision," p. 287-301, in Cartwright and Zander, *op. cit.*; and Lester Coch and John R. P. French, Jr., "Overcoming Resistance to Change," *ibid.*, p. 257-79.

participate in something, so why don't we find among us three or four people who will take on this project that the principal is pushing? Then the next one that comes along, three or four different people can take on, and so on." In effect, relatively powerful informal relationships were operating rather successfully and realistically to resist change attempts. A principal like this one must probably learn to "join" the informal organization rather than keep fighting it. As with all aspects of planned change, ideas on ways to act when things go wrong must come from a sensitive diagnosis of the institutional-group-personal situation.

Communication

Probably no "human relations" term is more overloaded than the word *communication*—"communication breakdowns" are assigned causative power for nearly every kind of pathology in human operations. This is roughly parallel to listing all causes of death as heart failure. A small group or a school system may be moribund for many different reasons: underlying conflict about goals or means, use of inappropriate decision-making structures, lack of functional skills necessary to meet the demands on the system, to cite a few. While it is true that "communication is breaking down" in such situations, a good diagnosis must be more specific than this if it is to be helpful. The following is an attempt to get more specific about the communication problems faced by research groups.

A communication model.[18] Human communication may be thought of as the process involved when a *sender,* with some intent or state of being in mind, composes a *message* or set of symbols relating to that intent. (For example, a research group wants to get the rest of the faculty to respond to a questionnaire on homeroom activities.) The sender sends this message through a *channel* or medium (for example, a chairman makes the request orally in faculty meeting). But the progress of the message is encumbered by the presence of unwanted signals or *noise* (for example, the chairman is personally disliked, or doesn't speak clearly, or people only "hear" about the extra work that will be involved). The *receiver,* however, gets some kind of signal through the channel, and "de-composes" or decodes the message in some form, and some intent or state of being is evoked

[18] Communication on the institutional level is usually more formal than the rapid-fire interchange that takes place between people in a group, and no simple model will explain communication thoroughly. See footnote 21 for another useful model.

in him. (People in the faculty meeting think or say, for example, "I'll fill the questionnaire out," "I need more information," "I'd like to join the research group—this sounds interesting." [19])

Usually, of course, the receiver then becomes a sender, originating messages which travel back to the original sender, who then discovers how successful his attempt at communication has been. This in turn sets off new messages, and so on.

Briefly, we would like to discuss some problems in relation to each of these aspects of the model, illustrating with the case of a school system where cooperative research is going on.

The sender. If we consider the research group as a sender, it encounters many problems. The sender in this case must clarify its intent, which may be internally conflicting and diverse; decide on specific messages and the channels to be used; make plans for cutting down "noise"; and above all be thoughtful about the characteristics of the *receiver* (What can people hear? What do they want to hear? What, specifically, do we hope people will *do* as a result of this message, and how will we know whether they are doing it or not?). One of the most characteristic failures is neglecting to provide for accurate feedback (return messages) making communication one-way.[20]

We have discussed many of the internal problems of research groups above, and communication to the "outside" is probably severely hampered by such internal problems as the need to build security, frustration at vagueness and nonaccomplishment, fear of attack or ridicule, lack of cohesion, and even guilt at having ignored the rest of the staff for so long while we were "getting our house in order."

The message. Research groups, if they are successful at all, nearly always develop a special vocabulary, either from the language of research ("hunch," "open-end question," "bench mark") or from their own unique experience as a group (one group used "thug" in a special way to mean a particular kind of student leader). This vocabu-

[19] This is a simplified version of current communication models, notably those of Lasswell, Shannon and Weaver. For an illuminating discussion, see "Communication and Communication Arts," *Teachers College Record* 57, November 1955 (entire issue). See especially Louis Forsdale, "Helping Students Observe Processes of Communication," p. 120-28, and Philip H. Phenix, "A Philosophic View of Communication," p. 80-85.

[20] Alex Bavelas at Massachusetts Institute of Technology has experimented with pairs of executives in separate rooms, one with a telephone mouthpiece, the other with a receiver only. Explaining even a simple diagram to the other over the phone proves an impossible task. The sender becomes incensed at the receiver's stupidity, and the receiver furious because the sender cannot seem to make any sense. Usually neither of them mentions the communication one-wayness as a problem. (See *Proceedings*, Third Annual Seminar on Social Science for Industry, Stanford Research Institute, Menlo Park, California, 1955.)

lary, if used in messages outside the group, (e.g., overheard chats in the teachers room, or a faculty meeting) can be not only uncommunicative, but downright threatening and mysterious. Special words serve, in part, to increase cohesion in the research group, and so exclude outsiders.

The right amount of information in a message is hard to determine. One system, where study groups were preparing resource guides, found via questionnaire that teachers would much prefer brief summaries to longer, more thorough statements, even though the work of the groups affected them closely. Given opportunity for rapid and complete feedback, as in face-to-face communication, the amount of information can be adjusted quite easily to receiver needs.

The channel. One curriculum worker termed the telephone "the devil's instrument." He went on to explain that a phone call to a person feeling guilty about something was almost invariably misinterpreted, because the listener could not see the sender's face and discover accurately whether he was being censured, approved, accepted or attacked. The channel of face-to-face communication permits so many more meaningful messages to be sent at once that it is much to be preferred whenever the message is complex, or subject to easy distortion.

One school system had a "communication committee" experimenting for over a year with different channels, such as tape recordings of major decisions for playback to others, visual materials, skits and newsletters. Their experience favored face-to-face communication, as in a small group or interview, with carefully planned large meetings running second.

Where message content is especially threatening (i.e., may expose the sender or receiver to attack, ridicule, loss of status), *informal* channels assume primary importance. Use of informal channels (the teachers room, or whatever) carries with it, however, the danger of distortion. That is, the amount of psychological noise may be high, since informal channels are used primarily for messages of a personal-emotional nature, and do not have the careful checking of feedback that goes on in a well-conducted official meeting.

Noise. We have suggested above that the major noise operating to distort messages is psychological rather than technical in nature. For example, if A is speaking indistinctly someone will ask him to speak up, but if B is so threatened, insecure or anxious about his role that he is inattentive to what you are saying, this is less visible and usually much less remediable. Psychological noise can probably be

most effectively reduced by the kind of permissive, objective environment we have described earlier.[21]

Increasing the relative strength of the signal (e. g., repeating, illustrating) is another way to solve the noise problem, but it makes everybody work harder than he would have to if noise is reduced. Backing off in a group meeting when communication blocks become evident and asking, "What's the trouble?" is usually much more effective than repeated explanations, pressure to "make you understand" and argumentation.[22]

The receiver. The sender hopes that he is "getting through" to the receiver—that the state of being of the receiver corresponds with that of the sender. Whether or not this happens depends in large part on the receiver's ability to hear the signal in spite of noise and to decode the message using the same code as the sender.

In cooperative research, however, some characteristics of the receiver may interfere with good "hearing" and decoding. As in the discussion above, he himself may be introducing psychological noise into the channel if he is anxious, hostile or threatened.[23] However, if the receiver (a nonresearcher) feels that he himself is doing something of value and that his efforts count for something in the system, then his ability to hear probably rises. Otherwise, attempts at communication are likely to be self-defeating, and the possibility of school-wide change is minimized.

The *interest* of the receiver in the message influences accurate listening and decoding considerably, and vice versa. This may be one reason why cooperative planning is effective. That is, communication accuracy goes up with perceived relevance of the message to self, though accuracy may drop if relevance is high *and* threatening.

One study compared the 60 per cent of a school system's staff who

[21] Carl R. Rogers and F. J. Roethlisberger have discussed this vividly in "Barriers and Gateways to Communication," *Harvard Business Review* 30:46-52, July-August 1952. Their major thesis is that the tendency to *evaluate* what another person is saying is a major block (source of noise). Evaluating or judging prevents the receiver from really *listening* to what is being said, really "sitting in the other person's seat" and understanding the communication from the sender's point of view. Receivers who evaluate and judge, or try to "set the sender straight" usually make the sender defensive very quickly, and communication worsens. The author's suggestion for improvement is: In cases of disagreement or conflict, when someone says something to you, try to understand and restate it until *he* says, "That's right," before you continue.

[22] For an account of how this can be demonstrated and practiced, see A. Harry Passow *et al., Training Curriculum Leaders for Cooperative Research,* New York: Bureau of Publications, Teachers College, Columbia University, 1955, p. 31-36.

[23] See Rogers and Roethlisberger, *op. cit.,* especially Part II.

had participated in a large-scale curriculum development program with the 40 per cent who had not. The participants were substantially more interested in projects other than their own, made more critical suggestions, and were more favorable toward curriculum development both in the immediate system and generally. This would be expected from what is known about ego-involvement. However, a follow-up study two and a half years later indicated that the interest-approval gap between project participants and nonparticipants had decreased a lot, apparently via increased communication. However, it is equally clear from other experience that simply "communicating" is not enough. The sender-receiver relationship must be relatively secure and equalitarian, and careful, research-minded attention must be given to the improvement of communication process.

Research and the Improvement of Human Relations

This chapter has been written primarily around *problems.* A cooperative research group in the midst of a functioning school system does generate many difficulties and tensions, within and outside its own membership. To forestall the conclusion that cooperative research equals trouble, it may be useful to review briefly some beneficent and supportive human relations effects of inquiry-with-others.[24] At our present stage of knowledge, these effects should be treated as *hypotheses,* rather than as general assertions.

Objectivity and Concern

Cooperative research experience, under good conditions, may encourage attitudes associated with the traditional role of the scientist—skepticism, critical thinking, respect for data, a passion for public verification as the test of truth, the ability to withhold judgment, intolerance of obscurantism. This is objectivity in the best sense. In addition, the cooperative researcher may come to *care,* have more concern about the particular problems which he is struggling to resolve through inquiry. It appears to be possible, moreover, to avoid the traditional poles occupied by the dispassionate scientist and the wild-eyed zealot-reformer. Cooperative research means, in essence, that teachers are working on real, immediate, ego-involved problems—problems about which they care deeply, problems for which solution-finding will make a difference. It also means that reliance is on a

[24] This material is influenced by Abraham Shumsky's provocative discussion in "Action Research as a Way of Learning," dittoed, Horace Mann-Lincoln Institute of School Experimentation, New York, 1955.

shared, public method of problem solution—scientific method. The researcher and the significant figures in his immediate social system have valid ways of checking the outcomes of action via the experimental approach. The cooperative researcher, from this viewpoint, is much less likely to engage in capricious, arbitrary or dependent action than the nonresearching member of a school system.

Confidence

As success experiences accumulate (crucial job problems are solved, are restructured or disappear without recurring), cooperative researchers tend to develop attitudes of increased confidence. These feelings may come from a variety of sources.

Success experiences. Increased confidence probably comes most directly as suggested above—through feedback to the researcher that he is doing an effective job in terms of the problems which provoked his research attempts in the first place. The increasing perception that answers to immediate difficulties *can* be located, given time and skill, may lead the researcher to make inferences such as this: "I (we) can tackle this and do a good job of it."

Need-meeting. Cooperative research has as a major strength its ability to meet teacher needs for achievement, support, recognition and group belongingness. Further, it can meet these needs in a way that helps work on the task of educating children rather than hindering it. Satisfying membership in a good research group can free the person to work on what is concerning him most about his teaching, since he has to worry less about his relationships with peers and immediate superiors.

A new view of "problems." After success experiences, problems are less likely to be seen as being evil, painful situations to be avoided or denied. They are more likely to be viewed as challenges to one's powers, which occur naturally in the run of experiencing. Job difficulties may be seen as less threatening, certainly as less enigmatic and mysterious, and are rather less likely to be endured in stoical or anxious silence. The general orientation to problems tends to be much more action-centered—but it is reflective, data-based action, not blind striking-out. The recognition that *others* have problems too, and that their problems are very like one's own problems, seems to be very important.

Methodological agreement. Confidence also comes from the fact that one is agreeing with significant others on a *method* of solving

problems, rather than on a particular preconceived set of solutions. Such agreement can loosen up researchers considerably. Fear of failure drops substantially when we know that we are trying things out provisionally, we know who will appraise the results of the try, we know that they are friendly and supportive of us, and we know that we agree on the method of appraisal.

When procedures are publicly agreed on, cooperative researchers can come to be more and more willing to trust the examination of their own immediate experience as a source of guides to action. (This is one definition of mental health.) Gradually, teachers can construct and validate new role expectancies for themselves as "evidence-getters" in the face of difficulties—and confidence changes may be substantial.

Adequacy

A third major family of beneficial effects of cooperative research may be loosely termed "adequacy." Cooperative researchers can come to be more and more effective in bringing about change in school practice—change that is relatively deliberate, rapid, smooth and enduring. Increased adequacy shows up in several ways.

Readiness for change. Good cooperative research may have as one of its products the fact that participants are less inert, less likely to get caught in spirals of self-defeatism. They may be more flexible, antidogmatic, and independent—or interdependent—as they approach problems. This seems to follow from differences in viewing problems (above), from methodological consensus, and from successful experiences in working with others.

Accurate diagnosis. Effective cooperative research can help participants to keep in closer touch with the realities of their own teaching and learning situations. This includes the teaching and learning that is going on between all roles in the school system. Reality-centeredness means a wider perspective, as well as more inclination to view the self as being an integral part of any problematic situation.

Skills for change. Good cooperative research, with the stimulating, permissive sharing of viewpoints and problems that is implied, can often function to release barriers that stand in the way of creativity. Teachers can be freed to be their imaginative, spontaneous selves more frequently than is possible in the normal course of school operations.

Finally, it is not too much to expect that members of a cooperative

research group may have as their major beneficial "side effect" a substantial increase in the skills required for collaborative work with others. If this were not true, there would be little justification in asking teachers to endure the tribulations outlined in this discussion.

In summary, it may be that the promise of cooperative research in schools lies as much in beneficial effects such as those suggested above, as it does in particular improvements in the quality of teaching and learning. It does seem clear by now that action research means better *problem solution,* because those who have to act on the data are also those who have gathered it. The crucial question may well be: Does cooperative research as we now see it make for better *problem-solvers,* as we have suggested above that it does? We need more and better data on this question.

Section 4

Conducting Research in the School Setting

THE THREE CHAPTERS in this section deal with certain problems that arise when cooperative curriculum research is conducted in a school, with the school staff as the cooperating researchers. First, Frazier discusses the necessities of organization and management that must be met and makes a number of helpful suggestions. Doll examines a number of inhibitors to the freedom to conduct research, again making suggestions concerning their illusory nature. Hall takes up the elusive problem of the ethical requirements that must be considered when school children are involved in educational experiments.

Chapter Nine

Organization and Management of the Research Process

ALEXANDER FRAZIER

AS HE ATTEMPTS to enlarge his own understanding of the research process and to perfect his skills in handling it, the field worker will be confronted with several questions. How shall research projects be organized? What new roles may leaders need to assume? What can be done to share or spread research findings once these are at hand?

Possible Methods or Bases of Organization

Concern is high among school people for learning how to set up working groups under conditions which will promote or facilitate research. In response to this interest, the literature is refining criteria that should certainly be useful to workers who are planning to organize research-centered curriculum projects. At the same time, the worker may find it equally profitable to review the opportunities that may arise in "old" groups or in routine activities to make use of some elements of the research process with the hope of improving the quality of projects already under way.

Guidelines for Fostering New Groups

How groups are created, who belongs to them and by what means they derive purpose—all these factors are known to affect the creativity of groups. During the past decade school people have learned much about the relationship of process and productivity. A review of the best advice now available on how to organize effectively for curriculum

improvement should suggest guidelines that would apply as well to research-oriented groups as to others.

Here is a summary of such guidelines that might prove useful in fostering new groups:

The closer the group is to the classroom the better. The faculty of a school or a part of the faculty is more likely to form a good working unit than is a group drawn from various schools.

Voluntary association is probably the soundest basis upon which a group may create itself or be created.

Definition of its own problems is probably the best way in which a group may begin to find purposes.

As a working group matures, its growth will probably include redefinition or extension of its problems if it remains free to develop its own sense of direction.

In the process of study, members of a "grass roots" group will develop new understandings that will affect the way they behave in the classroom. The degree to which these new behaviors can be organized and tested will indicate the level at which the group has been able to operate.

Leadership is composed of functions necessary to the maintenance of a group and to the furtherance of its purposes. However, these functions are best exercised as they are recognized and performed by members of the group. Official or status leadership must understand how to serve its particular functions without thwarting the development of leadership by other members of the group.

The soundest basis for improved instruction is participation by teachers in this process of self-study. The more numerous such local working groups, the better the chances for bringing about real changes in teaching based on the development of needed new personal insights.

As with the role of official leadership in these groups, so with the use of system-wide findings or formulas: care must be taken that support be given rather than violence done to the thinking developed in local working groups.

As new groups are organized or fostered, such guidelines may well be kept in mind. Doubtless the best possible groups for initiating curriculum improvement are voluntary associations of teachers in local buildings, organized to deal with their own needs and enabled to become increasingly self-aware and self-directing.

Realities of Existing Field Situations

However, to apply these guidelines as criteria by which to decide how well existing field situations may lend themselves to the research process is to court dissatisfaction, perhaps even to induce an attitude of defeatism. Most of the groups with which school people are now at work differ greatly in origin, membership and purpose from the created groups visualized in the literature.

The field abounds in all kinds of working groups, the origins of which differ from that of a voluntary self-association of teachers in a given building. Even in a single school will be found grade-level or department groups, committees of several varieties, perhaps a representative council, the total faculty itself—groups that originate in the type of school organization or out of its administrative history and concerns. Again, system-wide, there will be a multiplicity of committees, councils and associations. By its very nature as an institution, the school system abounds in groups with origins arising outside the groups themselves, often from the assignment and function of teachers or from the prevailing conception of administration.

The way in which membership is gained for these existing groups may also differ greatly from that advocated by the literature. In addition to voluntary association, teachers may belong to some groups because of where they teach (the faculty of Sherman Elementary School or John Marshall Junior High) or what they teach (kindergarten, core, or high school science). For some groups, membership comes through election; for others, through appointment.

How these existing groups define their purposes may also differ widely from the principle of self-direction. The purposes of some may come as a set of instructions from the administration. Some may be responsible to parent groups that hold certain expectations for their offspring. Other groups may inherit a set of purposes evolved out of past years of activity. Few groups are free to decide upon purpose entirely for or by themselves, although it may be that if they saw fit to do so, many could modify or extend their purposes.

Thus, an examination of the realities of the field situation in terms of the ways that origin, membership and purpose of working groups are idealized in the literature may cause some school people to decide that they are not ready for action. In order to employ a research approach, they may conclude, it would be necessary to scrap the apparatus under which they operate. They would have to start all over.

The weight of this conclusion can be paralyzing since the existing

apparatus is built into their everyday working relationships; it is institutional. Moreover, under it, school people know how to get many things done. They have learned to live with and work through it.

"How do we get started?" seems to be the question most often asked about research by field workers in school situations. The familiar answer usually begins with a definition of an ideal working situation, appropriate for the setting up of a new association under such guidelines as appear earlier in this chapter. If the worker asks in earnest, he may turn to and begin to foster such groups as he can. Meanwhile, his daily calendar is already crowded with meetings, such as those of the guidance committee of Austin Senior High School, the arithmetic study group in District C, the planning group for the mental health workshop—all kinds of existing groups with which he is now at work.

Perhaps a second question should be asked more often: "How can we adapt the research process to the kinds of activities being undertaken by groups with which we are already working?"

Possibilities in "Old" Groups or Routine Activities

To develop increasing skill in research, what may most be needed by school people is application of the process in as many of their present working situations as possible. The description of the ideal may serve to guide them in creating new opportunities, but they may also be concurrently testing out the process for improving their work in "old" groups and through routine activities.

Every school person with official leadership responsibility can identify existing situations in which he could, if he chose to do so, work for improved understanding of the research process. Here is a selection of such situations defined by six supervisors and principals [1] who have joined together to help each other gain better understanding in the area of action research:

Better use of library resources. The ten new multi-school librarians now assigned to elementary schools have been asked to work with one teacher in each school served by them to develop a full-fledged example of how library resources properly used can expand the scope of instruction. How can research techniques be employed to dignify the findings of this project and make them more meaningful to other teachers?

Effects of school social groups. One of the several study groups, voluntarily formed at the invitation of the principal, has chosen to work on the effects that various kinds of groups in the school, organized and other-

[1] Notes from a meeting of the Action Research Committee of the Houston Association for Supervision and Curriculum Development, Audrey Hicks, supervisor of the program for the deaf, Houston Public Schools, chairman.

wise, have on their members and on other pupils. How can the use of research techniques deepen a study that up to now has been chiefly at the discussion level?

Vocabulary needed by bilingual pupils. The kindergarten, first and second grade teachers of a school whose pupils come largely from Latin-American backgrounds have been working for a year to build a vocabulary list that will be used in the program of language readiness. Can something from the research process help them do a better job of choosing the vocabulary? Of finding more effective ways to develop the concepts involved?

Development of program for the mentally deficient. Dissatisfaction with the program presently provided in classes for mentally deficient or "trainable" children has resulted in an attempt to survey the experience of other school systems and set up some variations within the program to see if more can be done. At which points in this project can the research process or some aspects of it be adapted to help in testing the value of new methods or activities?

Exploration of the concepts of deaf children. The teachers of the deaf are vitally interested in the nature of the concepts developed by deaf children. Trying to get at the shape of these concepts is, of course, an essential part of the teaching process, a daily concern. The supervisor of the program, who did her master's thesis in this field, is exploring continuously with her teachers how best to reach through to the child's understanding—by means of pantomime, art expression, etc. Can this ongoing project be given greater soundness by use of the research process?

Study of "discipline" problems. A handful of teachers in one school turns up the majority of the behavior problems that come to the attention of the assistant principal. A study of behavior, he feels, would help these teachers understand both their pupils and themselves to mutual advantage. Could the process of cooperative action research be applied to this situation?

All but the last of these six situations involve a project with which an existing group is at work. The groups are largely those whose membership comes from the nature of the teaching assignment. Tasks for the groups are largely determined by assignments and defined by and with official leadership. The group on the effects of social groups and the projected group to study "discipline" involve the principle of self-association; the others do not. In short, these are typical working situations, as they exist.

While they fail to measure up to the guide lines for new research-centered groups, all would appear to the research-minded observer to involve projects that not only would profit from being moved onto a research base but that in most cases actually demand such a base if the results of study are to be of much value.

In fact, these examples could be cited to illustrate the opportunities

for undertaking basic research studies in the field. The investigation of concepts of deaf children, the selection of a basic vocabulary and methods of developing it for bilingual pupils, the collection and interpretation of evidence concerning the existence and influence of social groups upon young adolescents—these are areas in need of fundamental research that can be widely shared. Undoubtedly, the increasing professionalization of teaching below the college level will help in the assumption by field workers of a responsibility for conducting basic research of interest to their colleagues as well as to themselves.

Meanwhile, the examination of existing projects for points at which the research process can add to the worth of the studies should continue. It will serve to provide the experience needed before school people can develop the skill and consequent assurance that will enable them to become fully professional in this regard.

Opportunities to gain such experience can come, as has been suggested, from scrutiny of existing groups already at work on well-defined projects. Another source of experience may be found in routine activities related to the improvement of instruction, many of which are not presently oriented toward formal study of any kind.

For example, here is a series of thumbnail descriptions of activities familiar to most school people, noted in a meeting during which elementary principals were reporting on the procedures they use to improve instruction in their buildings. Study of this list of more or less routine activities for points at which research techniques could be introduced may serve to indicate to field workers possibilities for broadened experience:

Follow-up meetings after area or system-wide meetings. Whenever teachers have attended an area or system-wide meeting in art, social studies or the like, they meet in their building during the next day or two to discuss their reactions.

Demonstration by teacher. One of the third grade teachers prepared a demonstration lesson that was observed and evaluated by other teachers of the same grade.

Film discussion. A film entitled, *Why Vandalism?* was shown at a faculty meeting, with a discussion led by the visiting teacher working in the school. Many helpful suggestions were made for improving the local situation.

Study of pupil work. Samples of the work of all pupils are collected each six weeks, with follow-up conferences for about 10 per cent of the pupils. The principal brings perspective to the study of the children's work, and the interviews turn up numerous leads for study. For example, in one set

of interviews on arithmetic, the principal identified about 15 different ways by which pupils were avoiding the learning of number combinations.

Supervisory visitation. After a supervisor has spent the day in the various classrooms, she meets with teachers for an after-school meeting to make general suggestions for improvement.

Grade-level meetings. In one school, teachers in Grades I and II have been holding a series of meetings on writing; in the middle grades, on arithmetic.

Study of diagnostic test results. The principal compiles the test results for the building as a whole and confers with teachers who study their own results.

Study of curriculum bulletins. The principal and teachers go through curriculum bulletins together. In a study of how to improve problem analysis in arithmetic, they drew from various bulletins to make one of their own that would help them see the progression in development of this skill.

After-school course for teachers. After the language arts supervisor had spent some time in the building, a series of meetings was set up after school to help teachers improve their methods in this field.

Drive to improve by subjects. Improvement in each subject is emphasized in turn. Several weeks will be spent on a subject with the principal visiting classrooms to observe in the given area; perhaps a committee will also be working on the area, and sometimes a series of faculty meetings is held.

Exhibits of pupil work. Each semester teachers prepare exhibits of pupil work in science; teachers visit all other rooms in the building.

Cooperation between special and regular class teachers. In a school which has a cooperative program for the partially sighted, the teachers of regular classes have felt a little put upon because they had to take what they considered additional children for part of the day. Now, by sending to the special teacher a few children from regular classes who can profit from the particular materials and slower pace, a better feeling has been established.

Do some teaching procedures in language arts produce better results than others? How can we help children identify their difficulties in problem analysis so that we can use this knowledge in our teaching? If test results are better or worse this year than last, why? Are we certain? Is one suggestion for reducing vandalism of more worth than another? If we are to try out some new approaches, could we plan to keep track of what happens? How certain are we that anything constructive comes out of exhibits of pupil work, after-school courses, and so on? Could we find out? A school person trained to look for research opportunities might see in several of these activities points at which a group could be helped to turn its attention to research possibilities.

The research approach promises to deepen the attention that is now given to school problems. Most schools and school leaders, most teachers, are already at work on one level of study or another. Looking closely at what is now going on in routine professional activities should provide many starting places.

In summary, a study of the literature that describes how to go about organizing for curriculum improvement is useful in deriving guidelines for the fostering of new groups and for clarifying the process of inquiry. However, school people work with innumerable "old" groups that do not meet the recommended criteria as to origin, membership or purpose and yet which would stand to benefit by adaptation of the research process to their activities.

In order to gain experience as well as to improve the quality of their work, school people will do well to scrutinize thoughtfully such opportunities in existing groups and in routine supervisory activities. Rather than dwelling only on the question of how to begin, they may also profitably inquire into how the adaptation of research techniques can improve what they are now doing.

Varied Roles of Leadership

In addition to understanding how to foster new groups for research or utilize "old" groups and routine activities for this purpose, the leader in field situations needs to become proficient in a variety of other roles.

Knowledge of Research Process

If he is to serve as more than an administrator of research studies, the worker will need to develop an increasingly adequate understanding of the research process.

Most school people have had scant training in this regard, frequently only a course or two in statistics and a seminar related to the production of a thesis or dissertation. Often, even for workers who have been prolific in reporting new instructional practices or undertakings from the field, their postgraduate research ventures have been at the descriptive level or have been simple statistical studies derived from what pupils or other school persons have checked on questionnaires.

Consequently, in order to become proficient in conducting or even fostering research studies, most school people are going to have to

learn a good deal more than they now know about the research process.

They will need to learn the "steps" in research—exploring and deepening a problem area; hypothesizing; setting up a test situation; recognizing, delimiting and collecting data; handling data as collected; generalizing; testing generalizations; evaluating; replanning.

They will need to learn that knowledge of the "steps" does not provide a logical outline or time schedule for conducting research. Often, the "steps" have to be seen as aspects of a process. Problem definition may continue into and become different because of data collecting; the collection and study of data may suggest new hypotheses.

Knowledge of the research process must be deepened where it counts most—in understanding what is involved in exploring and deepening a problem area and emerging with a researchable hypothesis, in becoming creative as to the nature of data and its handling, and in learning how to generalize and make use of generalizations. The chapters in this yearbook dealing specifically with the process should assist greatly in the search by the field worker for an expanded role as research expert.

Effective Use of Consultants

Along with his increasing knowledge of research techniques, the field worker will find it necessary to think in terms of new uses of consultants to help in the promotion of the work of the groups for which he is responsible. Unless he spends thought on his answers to certain key questions, he may find his consultant a hindrance rather than a help in furthering the research process.

Which consultant will be of greatest help? Here the answer may depend in part on the extent to which the worker has developed assurance in handling the research process himself.

If he is a beginner in this regard, he may choose a consultant whose greater understanding of research will serve to support him in his own local role or roles. Again, he may feel competent enough in the research process and desire help from someone who can review or extend the scope of the problem area. Or, if he has a considerable variety of consultants from which to select, he may choose a person to perform a highly specific task such as helping to set up a test situation or to look at ways of treating certain kinds of data.

Since many able general consultants in education are not yet too

experienced in the research role themselves, it may sometimes be well to invite them into a situation on a tentative basis.

When should the consultant come into the picture? The answer to this question will depend upon the use to which he is to be put.

Consultants who are to follow through with an entire project should of course enter it at the beginning. Often, even when such a use is contemplated, the field worker will err in waiting to bring in the consultant until after the problem has been fully defined. Yet it may be that help would count for most in this initial step.

Even when a consultant is to be used chiefly to help with a specific function that lies later along in the process, it may be well to arrange for his early introduction to the project for the purpose of over-all orientation.

How much dependence should develop between consultant and group? Here the nature of the personality and the working habits of the consultant must be assessed as in any other situation in which consultants are used.

As school people are aware, some consultants can enter a situation on its own terms, perform their services as requested, and retire with the group forwarded in its purposes and increasingly self-directing and self-sufficient. Other consultants may occasionally operate at a level so far above the group or so apart from its own sense of purpose as to leave it in a state of suspended animation.

Consultants may need help in relating themselves to a given project in a way that will contribute fully and yet not flood a group with more than it can assimilate in-between times.

How often should a consultant be used? This question may depend for its answer on the progress made by the group or on the degree of dependence that develops.

Another aspect of the problem may be the extent to which the group turns up data that need analysis and to the availability of local help for this phase of the research process. Beginners in research often find themselves over their heads here and in need of skilled help to survive.

Of how much value have been the services of the consultant? Careful evaluation of the effectiveness of the consultant in his role as research expert must be continuous.

Again, many persons who serve successfully as consultants to groups working on general problems of curriculum improvement may be found less useful when their functions are altered and new ways of being helpful are demanded. In fact, one of the problems facing the

development of field research in education is that there is either a dearth of expertness or field workers do not yet know how to relate the services of research experts to their own needs.

A close watch on effectiveness and sharp analysis of ways of using consultants should prove of benefit not only to persons in the local situation but to others as the evaluation may be shared.

Attention to Pace and Timing

One set of leadership roles related to research in field situations derives from the need to give adequate attention to problems of pace and timing. These problems are similar to those arising from any on-going curriculum project but to the extent that field workers may be inexperienced in research activities, the problems may be properly reviewed in context.

Provision for meetings. Obviously, teachers working on a local research project being conducted in a single school will be able to get in touch with one another more easily and more frequently than will teachers in groups drawn from several or many schools.

However, in all cases, the demands made upon teachers must be seen against their full schedule of commitments, both in working with children and in serving as members of other groups with professional programs. Most research groups will be composed of teachers who have learned to protect themselves against demands that may seem to interfere with their teaching. Also they will have learned that it is necessary to budget their time among extraclass professional activities—those of faculty meetings, intraschool committees, in-service meetings, formal courses related to a degree program or a salary schedule, and teachers organizations in all their varieties.

One of the possibilities for economizing on the time of teachers is to tie in the new emphasis on research as part of other existing professional activities, as suggested earlier in this chapter. Faculty meetings, committee work, and in-service activities, perhaps even credit courses, may provide opportunities to emphasize the research approach to the improvement of instruction and give rise to the definition of research projects that can then become part of the existing program of teacher commitments.

Interim activity. Leadership that follows through on the thinking and planning that takes place in meetings is essential to insure a high quality of research. Often, the insights and intentions reached at the end of an enthusiastic session are lost or weakened because during the days or weeks between meetings, nothing much happens.

The nature of research projects varies greatly. Many are so closely related to the classroom that data collecting may become an aspect of teaching. In such cases, official leadership for groups working in a given school, whether provided by the principal or another teacher or by a member of the central staff, may be able to maintain frequent contact with teachers. For groups more widely scattered, such interim contact may be maintained by leadership through occasional visitation or by periodic progress reports.

As in any other committee undertaking, it is important that a group set specific tasks for itself to carry out between meetings. The definition of such tasks is a part of the research process when the collection of data is at issue. The tasks become in effect the working schedule by which the project moves forward; these tasks become the basis for shared study. They serve also to clinch the insights and promote the intentions of the group toward action.

Scope of the project. Probably one of the hardest lessons to learn in research leadership is how to delimit the size of a problem so that it remains manageable. To be guarded against in all types of research, the dangers of diffuseness are particularly pressing upon field workers because they are accustomed to attacking broad areas and programs.

Promoting general improvement in reading is one thing; conducting research in the best ways to bring about such improvement is another. While the organization for study may be similar, the process differs greatly. The essence of the difference is the refinement of possibilities for improvement to the point at which a hypothesis can be formulated, a design for testing it can be perfected, and sufficient evidence collected so that some judgment can be made as to whether reading instruction, to continue with this example, really will be improved if a new method or material or general conception prevails.

Of course, it is just this difference that gives rise to the hope that a growth in field research will improve the quality of efforts made by schools for self-improvement. Unless leadership learns, however, to bear down on a definition of problems that will keep them manageable, the likelihood of the findings' being of much value will be in doubt.

Beginners in field research face not only the problem of an overextended subject but also the accompanying problem of overly ambitious attempts to collect data.[2] Sometimes far too complicated types of data are sought; not infrequently, far too many are collected.

[2] One of the most helpful discussions of how research devices can be adapted or simplified for use by teachers is to be found in Hilda Taba and others, *Diagnosing Human Relations Needs*, Washington, D. C.: American Council on Education, 1951.

In either case, the point of the research can become buried in evidence that no one knows how to or has the time to treat adequately.

As leaders in the process, field workers would be well advised in the beginning to keep their research projects modest in proportion, to test carefully their instruments or devices for collecting evidence, and to seek such evidence on a sampling basis. There always exists the possibility of broadening the scope of a smaller project. To have one collapse because of overextension can be damaging in many ways.

With experience will come the assurance of how to operate so that larger and more ambitious undertakings can be projected and still remain manageable.

Pressure for results. School people are experienced in working through an area expeditiously and coming out with reports or bulletins that contain recommendations for new procedures that it is hoped will result in the improvement of instruction. In many cases, the fact that an area is chosen for improvement indicates the existence of certain pressures for action in or out of the school.

School leaders know how to handle pressure for results in most types of situations. The production procedures can always be stepped up in getting out a new guide. If necessary, a teacher or two may be freed of classroom responsibilities for a term to devote full time to production. Much of the everyday work in curriculum improvement concerns revision of already existing statements or bulletins in light of new time allotments, materials or emphasis. From the beginning, the general nature of the results has been predictable. The problem has been chiefly one of organizing and managing the procedure efficiently so that the results anticipated will be forthcoming within a reasonable length of time.

Against such a background of expectation and experience, field leadership in research undertakings may sometimes be impelled to push for results. The desire may be strong to settle on a design of some kind without thinking it through completely, to act on less than a full consideration of the essential data, or to share findings too soon. The inclination may be particularly pressing once the hypothesis has been defined. The completion of this step does, in effect, promote the expectation of results.

Yet the quality of the findings and of the concomitant learnings for the research group depends on its having all the time it needs. It takes time to analyze a problem area. Insights are not sharpened overnight nor conceptions of possibilities extended in a single meeting. Time is needed to find out and to reflect on findings.

Of course, the same need for time to learn is found in many in-service activities in which the emphasis is on development of new attitudes and understandings. But the pressure for results is less pronounced there. The research framework is such that something more is to be expected of a group working within it than from a group studying for self-improvement only. Consequently, despite an understanding by leadership of how to provide time needed by a group studying child development or creativity, it may need a new alertness to exercise the same type of role for research groups.

The leader will need to learn how to protect the group from the pressures that may bear on it from outside the group and also from within. He will need to learn how to help the group summarize and share its findings tentatively when it seems that this will help relieve pressures; how to dig in deeply on one aspect of a problem when it may seem that the group itself is beginning to feel that it is getting nowhere; and to complete a less-than-perfect project but not to close it out, seeing it as the first plowing of an area in which there is much more yet to be done.

In short, the leader will need to learn how to help a research group maintain itself long enough to realize its promise.

Provision of Clerical and Other Assistance

Finally, the roles of leadership in research must include the provision of clerical and other assistance needed to forward the project undertaken by a group.

Perhaps here the basic responsibility is related to the exercise of leadership in determining the scope of the project. For example, the need for clerical and other assistance from outside the group will certainly be influenced by the kinds of data to be collected and the treatment they are to be given. Again the leader new to this field is advised to work for projects of modest proportions, with careful tryout of instruments by the participants and perhaps a prerun on the ways in which resulting evidence can be handled. The scope of the project will determine how much help will be needed. To plan too elaborately, beyond the resources within the group or for help from outside, is to invite trouble.

Another decision to be reached in this regard is to determine the extent to which work that might be termed routine or clerical may have value for the participants. Tabulating responses from hundreds of questionnaires may be of little value to the researchers themselves. Evaluating and classifying entries in a journal or responses to some

kind of semiprojective device may be highly educative. In fact, such analysis is a professional rather than a clerical task and undoubtedly would involve the combined thinking of several members of the group.

Next, however, in many research projects, there will come a point at which there is agreement that certain routine jobs are essential to the progress of the project and that help in getting them done would be of real service to the group. Here the leader will need to be ready either to free his available staff for this work or to bring in the needed assistance on a temporary basis. As experience develops, school people will learn how to include in their planning the funds that may be needed for additional help and to locate in the community persons who will be of greatest use.

One possible need for additional help involves other than routine clerical tasks. Sometimes what is needed is statistical treatment of data that may lie outside the skills of the regular office force or the usual part-time employee. Help in this phase of the work can be provided in some cases by the consultant if he is being retained on a continuing basis or help can come through locating properly qualified students in a local or neighboring college.

To summarize, leadership in field research involves more than understanding the various ways of organizing for research. The leader must become increasingly expert in the process itself if he is to be effective in helping a group move forward. He must learn the ways in which consultants may be used most effectively. Proper attention must be given to problems of pace and timing. Finally, he must help in planning how to get done the various clerical and other time-consuming tasks that may confront a research group as it proceeds.

Problems of Spread or Sharing

From two points of view, the leader of field research projects is confronted with questions relating to how to organize and manage the process so that spread or sharing takes place. First of all, he is concerned as a person with local supervisory or administrative responsibility for the improvement of instruction. The results of such a time-consuming and, it is to be hoped, rewarding way of working ought to be fully realized, he may feel, and not reserved for the benefit alone of the participants in a single situation. Also he may be concerned to some degree with wider professional responsibility to other school persons as the results of the research in his situation could have value for them.

Out of this two-fold concern, he will be working through several problems for himself—the relationship between process and results, the possibility of handling several levels of participation and his responsibility, if any, for thinking in terms of contributions to basic research.

Shared: Process—or Results?

At a given point in the research undertaken by a group, perhaps at what seems to be a natural place to tidy up one aspect of the project or it may be at the conclusion of a study, the leader will be faced with the question: What is there out of this experience that should be useful to others?

Of course, the answer will be qualified by how the leader evaluates the results. Will the results really make a difference to anybody else? Or are they significant, not in themselves, but for what they represent to the teachers who produced them? If something is to be shared in this instance, is it what was found out—or the way in which it was discovered?

Obviously, in some cases the leader will find it relatively simple to resolve his doubts. A particular research project may have been defined in familiar territory with results that plainly have value chiefly because they were arrived at in the situation. What may have seemed exciting or new or weighted with meanings here might well be received in another context as something to be taken for granted. Again, the research may have arisen from the uniqueness of a given situation. While useful there, the results would seem to lack possibility of application elsewhere. In still another case, the participants themselves might see the findings as lacking in general value; it was the concomitant learnings that really counted. The process of research would be more worth sharing than its product.

However, in other instances the resolution of doubt as to what to do about spread is not so clearcut.

Here, for example, is a faculty in one school that has spent nearly two years studying the best ways to help problem parents gain insight into their roles in facilitating learning. The researchers have tried out many approaches to their project, discarding some of those with which they began, modifying others, inventing new ways that seem to have merit. Tentative though they may be, their results include the promise of helping some mothers and fathers understand more readily how the pursuit of their own needs through their children can interfere with progress in school.

Again, here is a group of middle grade teachers from several schools who have been searching for ways to extend the teaching of reading skills beyond the program of the basal readers. In their year of study, they think they have found some leads. Certainly the evidence they have collected from observation, records and tests seems to indicate that this year their pupils not only have read more widely than before but also have had greater success in applying study-type skills to assignments in science and social studies.

Or in another case, a committee of counselors has been working to develop ways of identifying potential school-leavers and trying out the holding power of tailoring individual programs for them. The counselors think they have learned something from this experience. They themselves would like to share their thinking and such results as they believe they have, not only for what these may suggest to others but in order to have the direction and progress of the project thoroughly scrutinized by persons who have not been directly involved in it.

In all these cases, the field worker with leadership responsibilities may properly be concerned with the problem of sharing results. If something of value has been developed or discovered, it would seem that it should be put to use as widely as possible. If there are leads or clues for improved ways of working that have emerged in one situation, perhaps these could be followed up more effectively if they were brought out and retested and perhaps extended by other groups in other contexts. If a group has reached a point at which it may desire to have its findings shared and evaluated, that also would seem to suggest the desirability of seeking wider participation in the project.

Why should there be unresolved doubts in such cases as these as to the wisdom of sharing the results of field research? There is no question about the value of sharing the process. The more widely school studies are moved over onto a research basis, the better the prediction for achieving validity in the findings. But in the promotion of the process, there may be some possibility of coming to the conclusion that results are significant only as they emerge for the participants in a given situation.

What this would mean, then, is that every advance in understanding and insight would have to be experienced personally in a research setting to have value for the teacher. Such a conclusion is what one might come to from studying some of the simplified definitions of cooperative action research.

Yet, while the field worker will grant that "grass roots" learning based on deep personal involvement may produce the greatest and

most lasting behavior changes, he cannot operate on the assumption that everything must be learned in this way. Professionally, particularly if he carries over-all leadership responsibilities, he must look to many approaches to learning, many degrees of involvement and many levels of participation.

Thus, he will be interested in the spread of research results that seem to possess value as well as in the promotion of the process.

Levels of Participation

Perhaps the most practical way to arrange for spread or sharing is to think in terms of levels of participation. Not everyone can take part fully in every research project that may produce findings of value to him. How, then, can he be helped to "get into the act" at some point in the process where he will be able to learn something? How can we manage it so that the greatest participation possible will take place? [3]

First of all, it may sometimes be possible to broaden the base of the research project at one or perhaps at several points along the way. Teachers in a given school have found out some ways to help parents develop self-understanding; they may invite another school to sit in on the project and take some aspect of it for its own. Members of a middle grade reading committee, centrally organized, may return to their own schools and with interested teachers test out the worth of the findings thus far and decide whether to bear down locally in one or another direction on a problem arising out of the original project. Counselors may choose to evaluate what a committee of their colleagues has done to arrange individualized programs for potential dropouts and proceed jointly thereafter.

In broadening the base of active firsthand participation, the field worker brings much of the virtue of the process to others. Even though the phase of original problem definition has been passed by in the project, there may well be a further search for auxiliary problems that can bring even the value of this step back into the experience.

Another level of participation, less firsthand than the involvement just suggested, is that of seeking cooperation in some one phase of the project. The teachers studying problem parents may need more material with which to work; other teachers may take part in and learn something from this experience by trying out one approach and reporting what happens when they do. The reading committee may invite all

[3] This conception of levels of participation is adapted from expressions by Hilda Taba in the meetings of the ASCD Research Commission and elsewhere.

the other middle grade teachers in the system to help find out what takes place when the "best" reading group is freed for library research in social studies or science during the usual reading period. All counselors may be invited to evaluate the work their committee has done and suggest what the next steps should be.

Here, the "outsiders" would learn something of the process and also of the results. Although participation would not be full-scale, it would provide a sense of community of purpose. Members of the working group might seek cooperation from their colleagues in more than one phase of the research.

A third level is that of direct communication of the findings. The ways in which this may be accomplished are numerous and familiar to school people. The faculty working on parent insight may report at a general teachers meeting. The reading group may produce a bulletin to be studied in each building. The committee of counselors may share its findings through an article in the monthly newsletter from the superintendent's office.

While providing for less overt involvement than the other levels described, participation in projects through routine channels of communication in the school can and often does "pay off."

Through broadening the base of the project, seeking cooperation in some one phase of it, or using the familiar devices for communicating progress or results, many teachers can be brought into the research undertakings. Such techniques can involve more teachers than would ordinarily be affected by attempting to achieve full and direct participation from the beginning in each project or by trying to work each study through anew in every situation. The problem of spread is one to which much attention needs to be addressed. It is itself a fit subject for action research.

Contributions to Basic Research

Success in securing spread or sharing of research results in the local school system still leaves unresolved another major concern of field leadership. What obligation, if any, exists for sharing the findings of research with other school systems or, more broadly, with the profession as a whole?

The question carries its own answer if it comes out of a context in which the values of field research are thought properly to be confined to the process and to the meaning the findings have for participants. Under such a conception, it could be expected that cooperative research undertakings might become routinized so that, as a new

variety of in-service training, they would take their place beside or within programs of community study, programs of child study, workshops for the production of teaching materials and so on. Schools all over the country would repeat the same or greatly similar researches, the time and money involved being justified as worth while for the contribution made to teacher insight.

However, if the field research movement is to amount to more than just another angle for approaching the upgrading of teachers in service, then it will have to face up squarely to whether there are possibilities in the picture for field workers to make real contributions to the research needed in American education.

Much basic research in education requires the full use of field situations where children are living and growing up and learning. "While certain kinds of problems can be solved only by highly trained research specialists," Caswell points out, "other problems of equal importance can be solved only as teachers, supervisors and principals become researchers. This represents a highly important extension of the role of research in education, and it requires some important developments in research procedures."[4] The advancing professionalization of teaching may be thought to depend in part upon the willingness of school people to assume responsibility for finding some of their own answers or for testing the findings of scholars working within the limitations of laboratory situations.

The movement in this direction is evident. The organization of the Horace Mann-Lincoln Institute of School Experimentation, with its declaration of purpose that envisioned the expansion of educational research centered in field studies; the general decline over the past 20 years of campus or laboratory schools as the chief centers for educational research; the many developments growing out of the research ventures of the Association for Supervision and Curriculum Development, NEA—all point to the assumption on the part of field workers of increasing responsibility for making contributions to basic research.

For most professions already well established, part of the role of the field worker is that of extending knowledge in the fundamental concerns of the profession. In engineering, architecture and medicine, research operates on many fronts, with practitioners contributing much more to research than merely serving to test what has been developed in the laboratory. True, the practitioners serve sometimes as assistants in the field, as one level of participation; but they are also expected

[4] Hollis L. Caswell, "Foreword," in Stephen M. Corey, *Action Research to Improve School Practices*, New York: Bureau of Publications, Teachers College, Columbia University, 1953, p. vi.

to be, and are, creative and inventive in their own right as professionals.

With the great and continuing advances made in the preparation of teachers and other workers in education, it is reasonable to expect that the quantity and quality of basic research from the field will increase. Certainly, as school leaders survey their research projects and consider their responsibility for sharing, they should keep the larger audience in mind.

Problems of spread and sharing must remain of continuing concern to the leader of field research. At the same time that he may be promoting the extension of the research approach, he must be on the lookout for results that may be of significance to others. He will also seek a variety of ways to involve those not originally at work on a given project. And as he seeks spread within his own immediate sphere, he will be alert to locate and share more broadly those findings that may make a contribution to the profession in general.

The organization and management of the research process in the schools could include consideration of many problems.

This discussion has tried to clarify some of the possible methods or bases of organization by pointing up the realities of existing field situations and the possibilities that might be found to apply research procedures in presently organized groups and in routine activities, as well as by defining some guidelines for fostering new research-centered groups.

The chapter has also reviewed some of the varied roles of leadership in handling the research process—the need to become increasingly proficient in knowledge of the research process and how to help groups along in it; the need to plan for the most effective uses of the consultant; the importance of learning to deal with problems of pace and timing; and the need to look to the provisions of clerical and other assistance.

Finally, the discussion considers what is involved in the spread or sharing of research results. What is to be shared besides the process if anything? When? Can the results of field research actually be shared effectively except through participation? What levels of participation can there be in field situations? Do field workers have a responsibility for sharing their findings with others outside their own school systems?

Chapter Ten

Freedom for Research

RONALD C. DOLL

SUCCESSFUL RESEARCH activity in a school system, a university or anywhere else depends significantly on the freedom of personnel to do research. Freedom is often governed by conditions external to the researcher himself—by the general permissiveness and stimulation of the environment in which he works. Often, too, freedom, or its alleged absence, becomes a reflection of *feeling* about the permissiveness or stimulation provided by a given situation. This chapter has the threefold purpose of explaining how actual environmental conditions can influence freedom for research, how the researcher's own feelings about his freedom can affect his accomplishment and what the researcher can do realistically to assure a maximum of freedom.

Freedom implies reduction or relative absence of restraint. People who are free to make choices and to take action usually find themselves feeling secure and performing productively. In any situation, the degree of freedom these people have lies somewhere along a continuum from minimal to maximal freedom. This continuum cannot extend so far at either end as to include, on the one hand, no freedom at all or, on the other, complete uninhibition. Even in Hitler Germany in wartime, citizens had a modicum of freedom. This small degree of freedom expressed itself in scapegoatism and bootlegging, but it was present nevertheless. Probably man cannot be deprived completely of freedom of choice, even in concentration camps, and still live, or remain sane.

Even at the "free and easy" end of the continuum, we find laws, sanctions and rules that limit our freedom. These say to us, "You can't do exclusively what you want to do," or "Your own freedom ends where the freedom of other persons begins."

With some marked exceptions, teachers and administrators in schools and colleges tend to have more freedom than they seem willing to use.

Research and experimentation have long been limited in secondary schools, for example, by the notion that the curriculum is largely fixed by college entrance requirements. The Eight-Year Study and recent studies of college requirements in mathematics, the foreign languages, science and other subjects show the latitude teachers actually have in encouraging pupils to elect high school courses freely, and then in altering the content of these courses. Likewise, demands imposed by state legislatures, by administrators and by community groups sometimes exist only in our minds. A major purpose of this chapter is to show that educational practitioners are often freer than they think themselves to be.

Facing External Inhibitors of Freedom

Certain conditions external to the researchers themselves do realistically inhibit freedom for research. A few of these conditions should be examined.

Tradition

One limiting factor is tradition. The teacher or the administrator who comes, brimming with bright, new ideas, into a school where things have gone along similarly (and apparently quite smoothly) for a quarter-century may experience a rude awakening. He may propose in a faculty meeting that a committee of teachers should find out whether the marking system, now based on percentages, can be improved. His proposal is perhaps greeted by a few moments of silence, after which a veteran staff member tells him sagely that the percentage plan has worked successfully in the past, that possible changes have been considered from time to time, and that proposals for change have always been rejected. "We feel comfortable with our present plan," "We've always done it this way," and "We've been through all this before," are polite expressions which suggest that tradition has a firm grip. Pressing the point repeatedly may bring down upon the new staff member the antagonism of his fellows. He may henceforth use such alternatives as dropping the whole subject permanently, of waiting for a more opportune time, or of attempting a little research of his own.

Tradition affecting schools is sometimes strong, too, among community supporters of education. Citizens who pay heavy taxes and who have no school age children of their own sometimes say vociferously that what was good enough for their grown children and them-

selves is good enough for the children of today. Hearing statements of this kind, school administrators may begin by eliminating "fads and frills" and, of course, they may never quite get around to including an allocation for research in their school budgets. Crystallized thinking sometimes prevents research even in the teaching of the presumably safe three R's, which are held by some community members to be unchanged and unchangeable.

Fortunately, however, most school situations are largely unhampered by strong tradition. The rapid turnover of teachers and administrators, the American tendency to disregard tradition, and our refusal to think about and discuss specific traditions at length—all these factors militate against worship of tradition by school personnel and community citizens.

Lack of Time, Energy and Resources

For most classroom teachers, consultants and administrators, lack of time, energy and resources has proved a more tangible block to research. In an era in which so much more seems to be expected of the schools than ever before, school people often wonder at their ability to accomplish the things they do accomplish. A former, quieter era—if it was really that—boasted, in the larger cities and in certain of the smaller communities, research bureaus in central offices. The staffs of local schools thought of these bureaus as true centers of research activity. Research, then, was the exclusive property of trained operatives, and personnel outside the research bureaus could afford to overlook this as a major responsibility of their own.

The decline of research bureaus and the dissemination of research know-how among personnel at large have changed the situation. Crowding in among numerous demands for the attention of teachers, consultants and administrators is the realization that research must be done to move education forward. Hence, research becomes a competitor for time, energy and resources. In many school systems, it becomes a poor competitor because the exigencies of the day, the week and even the year tend to crowd it out. The absence of research projects may go unnoticed, but the absence of a state report or a PTA announcement may create a real disturbance.

Many teachers and other staff members are frankly skeptical of giving the time and energy required to do research. They often lack experience in actually doing it, but they have perhaps read research reports which describe laborious, time-consuming processes. Research

done hundreds of miles away raises grave questions about its applicability to the local scene. The results of it, even in its own setting, may seem meager and limited. These circumstances help to intensify the skepticism.

Wann reported, in reviewing his study of curriculum development through action research, that "teachers felt that finding time to carry on the activities involved in cooperative action research was the greatest difficulty they encountered." [1] In his report of the study, he urged that those who work with teachers try to reduce time pressures whenever possible, help teachers develop skills which will permit them to use time more economically, and schedule wisely planning meetings for research projects.[2]

Related to the problem of finding time and energy for research is the problem of assembling the necessary resources. The resources that school staffs need fall into two major categories: the material and the human. The former category includes, for example, standardized tests, facilities for mimeographing and the instructional materials for tryout. The latter category involves clerical help, assistance by central office consultants and the principals of local schools, and outside consultant service. Researchers require of other human beings emotional support and direct help in planning of, guidance in, and techniques for research. Often the most lasting emotional support comes from those with whom the researchers work daily, including their administrative superiors. Often, too, the best consultants help with special reference to guidance of research projects and knowledge of techniques and skills comes from outside consultants. However, neither the emotional support nor the research know-how that is obtainable either inside or outside the school should be overlooked. Promising research projects must be prevented from bogging down soon after their inception or midway in their course because materials to make them move are unavailable, because the spark that comes from the right human assistance at the right time is unobtainable, or because specialist service proves expensive or inept. Happily, one now sees encouraging signs that some schools are gradually solving problems connected with the lack of time, energy and resources for research.

[1] Kenneth D. Wann. "Teachers as Researchers." *Educational Leadership* 9:494; May 1952. p. 494.

[2] Kenneth D. Wann. *Teacher Participation in Action Research Directed Toward Curriculum Change.* New York: Teachers College, Columbia University, 1950. p. 152-53.

Preventives of Cooperative Group Work

A third condition which inhibits freedom for research is the sort of climate that prevents people from working cooperatively in groups. The individual researcher has a limited function. Usually he needs help from others. In many instances he can make his own work more effective by teaming up with other competent, interested persons. To know that others share the same legitimate dissatisfactions with present conditions and with the present extent of knowledge builds morale. To know, further, that one may have help and stimulation and may experience improved decision making by joining with others gives greater assurance of ultimate success.

Occasionally one finds schools and other educational institutions in which the proposal that staff groups work together, with or without lay participation, meets with disapproval or only anemic support. Sometimes staff members have had unfortunate experiences with cooperative group work. Over-talkative group members, the feeling of floundering, and suppression that prevents people from expressing their views—these and other difficulties cause people to dislike cooperative group work. With the exception of the few maladjusted individuals in every population, the skeptics of cooperative group work usually need pleasant experiences with the friendly spirit and the genuine productiveness group activity can give them. Further, they need skills in dealing effectively with other group members and with themselves. Unfortunately some staff members seem to lack these pleasant experiences and personal-social skills all their professional lives. But skills can be learned!

The principal of an elementary school in the East was noted for her disrespect for cooperative group work. Her faculty meetings were few and were devoted to the making of administrative announcements. Almost nothing was decided cooperatively by administration, teachers and parents. The principal dealt with teachers on a one-to-one basis, and policies were announced in memorandums that came from the school office. When teachers in this school were given an opportunity by central office personnel to work cooperatively in groups on several projects, they showed the greatest dissatisfaction with group work that was evidenced by any of the teachers in the school system. Furthermore, they proved most inept in group work. However, after several weeks of pleasant experience with working in groups, they expressed more enthusiasm for it.

Freedom for research seems to depend in part on arrangements for getting staff members together at appropriate times and places

and on the encouragement that is given them to stay together long enough, and thoughtfully enough, to make their association worth while. Curriculum leaders are slowly improving their skill in helping groups manage themselves cooperatively and productively.

Miscellaneous External Blocks

A few additional inhibitors that occur in certain school situations are these:

1. Research activity has failed significantly in one or more instances, and it has been deemed unworthy of further expenditure of time and money.

2. A particular research project is believed to have endangered the educational welfare of children.

3. Research looks so much like John Dewey's "experimentalism" that it is out of step with the prevailing educational philosophy.

4. Research procedures have been found difficult—even incomprehensible.

5. Research is considered to be the business of a few administrators.

6. Research has threatened the strongly held but vaguely supported opinions of cer'ain supersensitive and influential teachers and administrators.

These inhibitors appear occasionally or rarely. One reason is that American schools are merely on the frontier of research activity, and most inhibitors show themselves only after school personnel have had some experience with research. In general, research activity has not yet become common enough for these miscellaneous blocks to have widespread effect.

Recognizing Internal Inhibitors of Freedom

The literature of individual and social psychology is filled with evidence that people's feelings count heavily in determining their decisions. One's own feelings are as much a factor as the external conditions with which one must reckon. Possibly the outside conditions we blame for our failures weigh less heavily than our feeling that we cannot succeed or, even, that we wish to fail. As a man "thinketh in his heart, so is he."

People have numerous and varied feelings about research. Some of these feelings seem fairly obvious; others prove to be obscure, if not unfathomable. Often the negative feelings are hardest to get at.

In many quarters, research is held to be a "respectable" activity. Not to engage in it causes one to think of respectable reasons for neglecting it. Behind valid-looking reasons like lack of time, there often lurk real and basic reasons like feelings of fear, threat and uncertainty.

When people do not feel free to do research, reasons like the following often operate:

1. They are afraid to experiment with public money and with other people's children.

2. They fear starting research activity in the wrong situation or in the wrong way.

3. They feel threatened when they are urged to do research concerning matters about which they are already insecure.

4. They believe they lack the necessary understanding and skill to make the end result satisfactory in their own and other people's eyes.

5. They are wanting in the adventuresome spirit that would impel them to take calculated risks in solving their problems.

These internal inhibitors of freedom for research, selected from a number of possibilities, will be dealt with consecutively in the following pages.

The Feeling of "Social Obligation"

Some persons are conscientiously opposed to trying or investigating anything that may affect other people's money, time or progress. For ethical or other reasons, they prefer to "play it safe." They hold that taxpayers contribute funds for the education of children in accordance with tested ideas and practices. To use these funds partially in experimenting with untried ideas and practices is to assume undue authority.

Futhermore, these persons believe that using other people's children as research subjects may endanger the children's welfare. They point, for instance, to the temporary lack of arithmetic skill that can come from postponing the teaching of long division. Or they question research and experimentation in the teaching of grammar that may delay explaining the possessive use of the gerund until the eleventh grade. They doubt that experimentation in education is analogous to experimentation in medicine, even when they are reminded that groups of physicians and individual practitioners are constantly experimenting with human reactions to medical techniques.

In a community in which considerable research activity was under

way in the schools, a town-wide meeting of the Parent-Teacher Associations was called to gather reactions to the current research projects. Several hundred parents and teachers listened to reports of the projects. Then they divided into groups of fifteen to discuss what they had heard. At the conclusion of the discussion period, parents and teachers filled a reaction questionnaire anonymously, but with identities of the parent group and the teacher group carefully distinguished. The over-all result showed the parents more willing than the teachers to have children used as research subjects. The main reason offered by both parents and teachers in support of research was the importance of learning new and better ways of teaching, even though occasional loss or delay might result from the experimentation.

In the situation just cited, certain parents who were high in the power structure of the community had been consulted about the research projects near the time these projects were initiated. Possibly the influence of these informed parents had an effect on the favorableness of the total parent reaction. With help, teachers can overcome misconceptions about the nature of their "social obligation." Much of this help can come from influential citizens and courageous administrators. Too often, members of the teaching profession, operating on their own cultural island, develop unrealistic notions of the dangers of experimentation.

Fear of Making a Poor Start

Freedom for research is impeded also by fear of starting research activities wrongly. The methodology of research has, in the past, been held close to the vests of officially delegated researchers. One result is that many curriculum workers feel ill-equipped to determine what school situations need researching and just how to begin the research process.

Staff members of schools, colleges and universities are surrounded with problems in teaching, administration and supervision. Which of these problems should be researched? Can some of them be solved, or at least reduced in intensity, by other means? On which problems can the researcher use his time most profitably? Potential researchers sometimes feel that at least an informal diagnosis of the total educational milieu should precede the identification and definition of specific problems. Anyway, having to make value judgments about the relative importance of researching several different problems seems to certain timid persons to be complicated enough to prevent them from getting started.

When they do decide what problems to attack, staff members are faced with the need to take fruitful initial steps. Lack of experience with research procedures shows up at this point also. How long a time should be spent in "walking through the problem" to identify it thoroughly? Once the problem has been identified, what can be done to narrow it so that it can be managed? When the problem seems crystal clear, what then? These are rather typical questions raised by would-be researchers who think together about the research process.

A university instructor reports that he has tried in recent years offering students in his classes in curriculum improvement several topics around which they might design term projects. The topics have included curriculum scope and sequence, research procedures, curriculum design, applications of leadership theory and analysis of curriculum materials. The instructor has followed several of his students into their field situations to assist them and to learn about their difficulties. He reports that of the nine or ten topics he has recommended, research procedures have been discussed most and used least. He believes that a serious block is the insecurity his students feel about designing and initiating research projects.

The present yearbook and other written materials, as well as the assistance provided by consultants who know the research process, can do much to eliminate the fear of starting research projects.

The Threat in Researching Certain Matters

If a person is an expert in reading, and if he knows no reason to be skittish about doing research in reading, he will probably feel free to investigate it to the limit. In those areas in which people consider themselves to be competent, they usually feel secure. They tend to be open-minded, and they can afford to risk wrong answers.

When we are anxious or uncertain, we react differently. Most of us feel threatened by being asked or forced to investigate subjects outside our range of competence. When we do investigate them, we tend to close our minds to significant facts, and are afraid even to venture hypotheses.

Consider, for example, the teacher whose classroom control is disintegrating. Suppose her supervisor suggests during a conference that she help with a research project on discipline. The teacher, if she behaves normally, tends to stiffen, to put up her reserve, to close her mind to the whole idea. Now this same teacher may be a competent, secure student of science. If the supervisor had proposed a

research project in the teaching of science, she might have proved much more amenable to the idea.

Instructional leaders should recognize and counter their own and others' feelings of threat and insecurity. Some threatening matters can be avoided completely; others can be handled with due caution.

A Suspected Lack of Understanding and Skill

Internal inhibitor number two was titled "fear of making a poor start." When would-be researchers become seriously concerned about lacking understanding and skill, they look beyond the initial stages of the project. They begin to worry about their ability to complete the project to the satisfaction of all interested persons, including themselves. Anyone who has helped carry a sizable research project to its completion knows that perceptiveness and skill are needed at numerous points in the project.

Let us assume that a committee of eight or ten teachers and administrators is working on a social studies program for children in kindergarten and the first three grades. The committee has surveyed yearbooks and other professional literature regarding social studies programs for young children. It has examined courses of study and course guides prepared by a number of school systems. The committee members, at their third meeting, agree about at least one thing: social studies programs for young children are so varied that it is senseless to try borrowing one.

At this point, someone suggests that some research be done. The initial and preparatory activity consists of reading appropriate literature about children's characteristics and needs. The problem faced by the committee receives extended examination, and the following crude hypothesis emerges: If we ask the children in our classrooms what experiences in the social studies are real, current and vital to them, we can build at least the basis of an acceptable program.

So far, progress has been fairly smooth. The greatest difficulty now comes in deciding how to learn from the children what experiences are real, current and vital. The discussion goes round and round. At last, a university consultant is called in. He senses the confusion and suggests several alternative procedures, such as interviewing, using questionnaires, observing, having children complete unfinished stories, interpreting children's pictures. The group goes back to work with renewed enthusiasm. Some procedures function better than others. Some, like interpreting pictures, seem to call for the services of a psychologist. After some further difficulties, the com-

mittee concludes that the hypothesis has withstood the test involved in measuring children's feelings. Committee members are able to agree upon certain findings which are incorporated in a published guide. Nonmembers of the committee are urged to use the guide creatively in trying research procedures and in adding to and subtracting from it.

In this situation, understanding of and skill in research processes were needed particularly as the committee moved past the initial stages. How to maintain harmony in the group, how to get the best contributions from individual group members, how to hypothesize, what research procedures and techniques to use, how to use the procedures in differing situations, how to interpret results, how to report the results—these and numerous other insights and skills can be acquired best through actual experience. Continued, guided experience in sequential research activity of this kind can build researchers' confidence in their ability to carry a project through to a fruitful end.

Lack of a Pioneering Spirit

The nation owes its greatness to persons who have been willing to take risks. A few of the risks reported in history have been wild ones. Others have been carefully calculated in advance.

Research is an excursion into the unknown. Like the pioneers of earlier centuries, the modern researcher in education must have a spirit of adventure that leads him to risk his time and resources for a cause.

Skilled researchers take calculated risks. That is, they survey the territory to be investigated and make an estimate of their chances of success before they take a plunge. Some persons react favorably to this sort of adventure. Others find it hazardous. Still others consider it too much trouble, or somehow doubt its worth.

Persons who do not enjoy risk-taking or exploring the unknown in education feel neither happy nor free when they help with research. For example, the school administrator who likes everything orderly about office and school, who submits all his reports to the superintendent's office well ahead of time, who assists his secretary with the mimeographing to assure its neatness, and who sees himself mainly as a superior office manager may well distrust the untidiness and the insecurity one often finds in curriculum research. Venturing is not for him. He relies on his own observations and informal researches—particularly those conducted years ago. To prevent becoming unduly disturbed about curriculum and other problems, he may even avoid walking the corridors of his school or visiting its classrooms.

If everyone exhibited the same lack of pioneering spirit, curriculum research would languish. Fortunately, however, the same spirit of inquiry that has brought great gains to industry, agriculture, medicine and numerous other human endeavors can be found in education. One finds fewer and fewer educational leaders who conceive of their position in terms of routine operation. Classroom teachers, better prepared than in any previous generation, need only the encouragement and help that will fan their spirit of inquiry.

Providing Freedom for Research

The two preceding sections of the chapter have recognized some of the common but removable impediments to freedom for research. The present section will report specific ways in which personnel in education can counter the impediments. On the following pages are several suggested actions that can be taken to release people for more effective curriculum research.

1. Build a feeling among potential researchers that it is all right to have problems.

Several years ago a lighted sign carried the advertisement of a flea powder manufacturer. A dog in the advertisement was shown saying to another dog, "Be's you got fleas?" The second dog replied, "Sure I are. Everybody do." Canine number two had evidently learned that it was respectable to have fleas.

By way of contrast, not everyone in education considers it respectable to have problems. One of the basic tasks of administrators and teachers experienced in research is to show other personnel that having problems is perfectly healthy and normal, and is even to be encouraged. The administrator or the teacher who never admits to having problems of his own can probably not do this. People in status positions should show by their daily behavior that they expect other people to be puzzled and uncertain at times, even as they themselves are sometimes puzzled and uncertain. Whenever feasible, administrators should share professional problems with their staff members, and vice versa. Less stigma attaches to *our* having a problem than to *my* having one.

Teachers and administrators frequently voice their problems in a form that is more respectable than real. For example, the teacher may say that the principal's office bothers him with frequent interruptions of his classroom routine, and that because of these interruptions, his pupils lose interest. When this respectable statement of his problem has been "pushed back" far enough, one may find that the teacher

is really troubled by his own failure to vary his teaching procedures. Obviously he needs help in clarifying and stating his true problem (which is in part his relationship with the principal), and especially in accepting it as being respectable and worth while.

2. Design researches that will satisfy the needs people feel.

Working for extended periods on other people's problems can become monotonous and burdensome. Yet this is precisely what many administrators expect their teachers to do.

A superintendent of schools complained that children in grades four through six were not developing social studies concepts adequately. He urged a committee of teachers to prepare Morrisonian units which would presumably speed the development of the desired concepts. The teachers went through the expected motions and emerged with an inferior product. They stated that the basic difficulty lay in their disbelief that the concepts learned by the pupils were deficient in either quantity or quality. As one teacher put it, "This was his (the superintendent's) idea, not ours."

People feel freest when they do research on problems and situations they themselves face, and know that they face. Being permitted and encouraged to satisfy one's own needs helps build enthusiasm for additional need-satisfaction.

A corollary to statement number two is that we should let people do research in areas in which they feel secure, as a basis for moving into areas in which they feel insecure. Enough has already been said about this topic to indicate that people tend to show enthusiasm for doing research about subjects that imply no threat.

3. Start gently, perhaps on a modified-voluntary basis.

Booming into research activity with a show of force often has a demoralizing effect. It resembles bursting suddenly upon a covey of quail, and it results in about as much cooperative effort.

The gentle, unobtrusive start generally works better. Heralding research activity widely gives the implication that great things will be accomplished as a result of the research. Perhaps it is a bit dishonest to advertise results that are not yet known. In any event, a great hue and cry tends to make guilty heroes of the actual participants, and it may scare off at least a corresponding number of potential participants. Teachers feel less free to help if they are likely to be called the fair-haired children of the administration.

Most successful research projects lack the grandiose quality that would require numerous participants. The act of discovering and work-

ing with a few interested, able researchers suggests that some participants will volunteer their services and others will "be volunteered." No large scale drafts of manpower will be required. Final acceptance of the research workers can therefore be done unobtrusively, on the basis of interest and ability, without disturbing large numbers of people.

If school personnel are to feel free to do research in the future, they should sense no stigma in failure to volunteer at any given time. Subtly, persons responsible for research projects must encourage the thought that many kinds of professional activities are valuable and necessary, and that only one of these is research.

4. Talk often about the importance of getting evidence.

As has been said previously in this yearbook, the collection of evidence pervades the total research process. Evidence-getting is the lifeblood of research, yet human beings seem to find it natural to resist or to neglect the collection of evidence. The compulsion to call for facts seems to come only when we have educated people to the importance of facts in solving problems.

Researchers who are most aware of the importance of evidence should call for it often as they work with other persons in groups. The value of this procedure was demonstrated in a central steering committee whose members had a verbatim record made of their meetings during a year-and-a-half or two-year period. The record showed only two or three members asking for evidence about school situations at the beginning of this time. At the end of the two years, the percentage of members who were disposed to gather data had approached 50 per cent. Wider acquaintance with matters about which data could be gathered, together with increased knowledge of ways of collecting data, seemed to build the committee members' security in the process of research.

5. Help people find security in groups, and help them work together successfully as group members.

Lewin and other social psychologists have demonstrated convincingly that groups can help to build morale among their members. To assure this morale-building, the members must pay attention to group process. Constructive comments, helpful suggestions and all-round desirable experiences in the group setting make people feel satisfied and secure. Research can be a lonely, more-than-usually difficult activity without the support of persons who share the same difficulties.

Danger lurks in being so much concerned with the product of research that one forgets the process. A significant part of the process, having great effect on the product, is the quality of interrelationships among the researchers.

6. Provide safety valves through which to "blow off steam" when things do not go well.

Staff members new to research need frequent reassurances. Frustrations sometimes build up, and discouragement increases. At such times, researchers need someone to whom to tell their troubles. This resource may be an individual, experienced researcher, or it may be a whole group of persons with similar troubles. Staff members may need to complain bitterly and to blame status leaders. Often they need a change of pace. For instance, meetings for business may be interspersed with social engagements. Parties, teas and picnics help participants in cooperative research see each other in new lights. Later, a fresh look at the common problem may bring better progress in solving it.

7. Allow for the lone researcher as well as for the researcher who wishes to work with only one or two other persons.

Persons who lack skill or interest in working in large groups can often be involved in doing research on a 1 to 1, a 1 to 2, or a 1 to 3 basis. That is, a principal, a curriculum coordinator or a teacher experienced in research may work with one person or with two or three people whom he can stimulate to conduct researches "on their own."

A curriculum coordinator reported recently at a state conference the case of obtuse Miss X who would apparently cooperate with no one. Her attitude was expressed in her frequently voiced statement, "I always erase my blackboards so that no other teacher can learn my secrets." The coordinator worked her way slowly into the teacher's confidence and was surprised to learn that the teacher would welcome help with professional problems, provided that the help could come from an individual who would keep all information confidential. One of the problems was to learn why her pupils seemed to rebel at her teaching of arithmetic. Coordinator and teacher worked together in surveying the situation and making the following hypothesis: If arithmetic experiences are made an integral part of the real life experiences of children, the children will both like and learn arithmetic better. They cooperated subsequently in devising and adapting problems concerning pupils' height and weight, baseball batting averages,

and measuring the playground for new game sites. At the end of this portion of their research, they concluded that the pupils liked their arithmetic considerably better and learned it just slightly better by the "real-life method."

Evidently the curriculum coordinator worked with the teacher in the most effective way she could—i.e., separately. Without being permitted to work on a 1 to 1 basis and in secret, the teacher would probably not have felt free to find an answer to even one of the problems that were troubling her.

8. *Use every legitimate means to build understanding of the research process.*

As has been said previously, failure to understand how to proceed can inhibit people from doing research. Possibly understanding can be built best by direct participation in all phases of research projects, with simultaneous analysis of the process. Because direct and full participation is not always possible for everyone, however, every legitimate means should be used to build understanding. One possibility is increasing the number of persons who are given an opportunity to participate even on a partial or peripheral basis. Another is describing successful research projects, giving careful attention to the process. Still another is preparing brief, well-illustrated talks on the process, as was done some time ago at a state ASCD meeting. A fourth is sending potential researchers to sections of books and magazine articles that make the process reasonably clear.

Someone who knows the process should serve as a resource person in every project. So often this person hurries through an explanation to a group of would-be researchers and then leaves them floundering. As difficult a process as action research or fundamental research deserves careful, patient, supportive teaching by example, repetition and every other device that proves helpful.

9. *Involve in research activities those teachers, parents and other persons who are high in the power structure of school and community.*

Perhaps every organization has in it one or more persons who count more in a showdown than do the rank and file of the membership. These people, who work sometimes in the open and sometimes behind the scenes, are said to be strongly entrenched in the power structure of the organization. Their blessing gives life to new projects, even as their disavowal causes new projects to die.

In one community, the high school principal had influence enough

with the board of education and citizens groups to block the cooperative curriculum improvement program which the superintendent and the curriculum director were advocating. In an individual school, a teacher who had been on the staff nearly 20 years prevented several promising projects from getting well under way. She accomplished this by influencing other key teachers to controvert plans made by the principal and an elected steering committee.

Examples like these suggest that researchers may never feel completely free unless they have assured themselves that they have involved in their deliberations the people who genuinely count. How much to involve them becomes a special problem in each situation. Sometimes a powerful person remains involved only until he becomes convinced that he himself has originated, or at least approved, the major ideas, and he can then safely move on to other activities.

10. Provide all the time, resources and help you can.

This suggestion is worded to imply that time, resources and help are very difficult to obtain in many situations. Research is often a neglected facet of the educational enterprise. In many school systems, teachers are never released from their regular duties to help make cooperative curriculum research really cooperative. Money to employ consultants, coordinators or other helpers is often totally unavailable.

When the situation looks especially black, ingenuity can begin to operate. State departments and county offices may be able to help. The national office of the ASCD arranged some time ago to provide resource aid to researchers who needed and wanted it. Some of the best arrangements have been made with teacher education institutions. At least one teachers college has devised a plan which solves both the released-time-for-teachers and the human resource problems. It releases its seniors, after they have completed their formal student teaching, to teach one day each week in school systems that request the help. The student teachers thus relieve regular teachers as often as one day a week, if this is desired. To assure that the arrangement is legal in the state in which it is operating, a regular teacher who remains on duty assumes general responsibility for a given student teacher's classroom, to care for emergencies. Meanwhile, the college's instructors of seniors, who are free of teaching responsibilities on the day their students are in the field, make themselves available as consultants to groups of public school personnel.

Several other ways of solving the problem of insufficient time and help have been devised and are reported in the literature. Some of

the methods have proved so workable that all persons concerned with research should attempt one or more of them.

11. Attend to the climate of the school as a whole, as a valuable stimulus to research.

Those who visit numerous schools can sense the educational climate of a particular school by spending an hour or two in it. Some schools are tense; others, relaxed. Some are businesslike and autocratic; others, businesslike and democratic. Some schools seem to exist mainly for the principal and the teaching staff; others, mainly for the children. In some schools, teachers and children feel limited and restricted; in other schools, free and unconfined.

Much of the climate seems to depend upon the principal. Of him, Cubberley said years ago, "As is the principal, so is the school." A hypothesis worthy of further test is that research flourishes best in schools whose principals try hardest to behave democratically. Democratic leaders seem, for instance, to be optimistic; to involve others in making certain decisions; to ascribe reasons for the decisions they themselves make; to permit others to make mistakes and enjoy successes; to give credit where credit is due.

Freedom for research is an important aspect of the climate of a good school. The principal contributes to this freedom by both permitting and helping the teachers to try ideas and to find out what is true and good. In most school systems, he will be prevented from doing this only by his own predispositions or by outright prohibition coming from the superintendent or board of education. Subtle and difficult of analysis as the climate of a school is, those who are most responsible for that school do most to determine its climate.

12. Be realistic about the limits, internal and external.

Perhaps the easiest way to avoid doing research is to say you can't do it. This simple statement of a conviction, real or unreal, has done untold damage by keeping people from starting.

Some, at least, of the limits do not exist. They are merely in the minds of individuals as they think about limitations within themselves and outside themselves. Religion and philosophy have been used for centuries to remove people's unfounded fears and doubts. Unreal internal limits are often overcome by "the power of believing."

External limits, likewise, are sometimes more imagined than real. Consider the principal who said to his superintendent, "I understand that you don't want our present system of reporting to parents disturbed. If this hadn't been so, my teachers and I would have tried

conducting some parent-teacher conferences at the end of the last report period."

The superintendent showed surprise. "Where did you get that idea?" he asked.

"Mr. Margate (another principal) told me. I think he overheard you discussing the matter over the telephone when he came to see you one day."

The superintendent's alleged antipathy to parent-teacher conferences resulted from Mr. Margate's misunderstanding of the real subject of the superintendent's telephone conversation. Subsequently three other principals said they, too, had understood, after talking with Mr. Margate, that the superintendent favored only written reports to parents.

In many situations, simple fact-finding is needed in learning what limits really exist.

13. Resolve to press against the limits that actually exist.

Some limits are real. For instance, a person may lack knowledge, skill or interest, and may not have anyone available to set the stage for building knowledge and skill or for acquiring interest. One's responsibility then is to press against these limits. Is there anywhere along the whole front where one can hope to make a gain—in this case, by securing help and gaining competence?

Curriculum workers throughout the country are pressing against the limit imposed by the fact that teachers have an all-day teaching assignment. In one community, parents and boards of education members opposed releasing teachers from their classrooms by employing substitutes to replace them. The curriculum steering committee, through the superintendent, then suggested several additional arrangements for releasing teachers. All of them failed of adoption. At last the board realized how vital to the professional staff was the work that had been scheduled. As a result of the steering committee's and the superintendent's persistence, the board agreed to pay selected teachers additional fees for working on Saturdays and during vacation periods.

Certain limits remain limits only because no one has ever pressed against them long enough and hard enough to make them yield. Other limits have never been analyzed sufficiently to see what is holding them in place.

14. Capitalize on growing expertness by urging its use in additional research.

Expertness in research will remain at its current level in an educa-

tional institution only if enough practice is provided to maintain it. Certainly it cannot move ahead further without additional practice.

"We tried something exciting a few years ago, and some of the teachers were quite interested in it. They worked together pretty well and seemed to have some good ideas. But nothing like it has happened in a long time." One hears this sort of comment too frequently. Research activity dwindles when people become too busy with other things, when a new administration is less enthusiastic about it than was the former one, or when the researchers have an especially disappointing experience. Educational leadership can do much to identify and point out new opportunities for research and then to give enthusiastic support and help in carrying it forward. If researchers do their best when they have freedom for research, and if expertness contributes to the freedom researchers feel, then everything possible should be done to maintain and strengthen expertness.

Achieving freedom for research has been depicted in this chapter as a worthy goal. Fortunately, all the impediments to freedom that have been mentioned and implied do not exist at any one time in any given situation. The 14 suggested actions, and others like them, have been found to have some effect in intensifying researchers' feelings of freedom.

Accumulated success in research activity helps further to remove the real and fancied blocks to research. Carefully and skillfully executed projects lend an atmosphere of authoritativeness and security that makes even the real blocks seem less insurmountable. In this as in other realms, man has more freedom than he is willing even to imagine.

Chapter Eleven

Some Ethical Problems

JAMES A. HALL

EDUCATIONAL RESEARCH is a fascinating business. Each of us is aware of the many problems which educational workers face today. The opportunity to tackle some of these problems and work toward a solution gives one a sense of significance and dignity that few other activities can match. Motivated by purpose and fortified by an understanding of the discipline of research, the educational investigator finds himself immersed in a task which is both absorbing and exciting. He knows that from every carefully planned research project some knowledge of significance will be gained, and he realizes that through the total of research, such as his, the answers to the problems of education will be found.

However, motivation of purpose and knowledge of the disciplines of research are not enough for the educational researcher. His is also a difficult human relations task. The problems he investigates grow out of the interactions of human beings. The subjects of his research are, in themselves, personalities with all of the feelings, attitudes, hopes, expectations and other complexities which characterize human organisms. The results of his research must be phrased in terms of human relationships and the result of the whole process is presumably some modification of human behavior. It is about some of the aspects of these human relationships of which the researcher must be cognizant that this chapter is concerned.

The Risks of Research

The author will not attempt to make this a treatise on ethics, but it is his rather strong conviction that in any situation where human relationships are involved, it is the responsibility of all to give ample attention to ethical consideration. The primary purpose of this chapter is to raise questions and to explore the implications of the questions

raised. It is not in any sense to be construed as an attempt to give final or definitive answers to the problems proposed. Some suggestions will be made but these should be considered as purely personal ones and viewed as the basis for further consideration.

In general, it might be said that the ethical problems center around these areas: To what extent is a researcher free to tamper with complex organisms and their relationships to one another? To what extent is he free to set up conditions which are strictly his—conditions with which the subjects of research may not even be familiar and which are not of their making? Judgments have to be made as to what is right, what is wrong, what is proper and what is improper. It seems inconceivable that research could be carried on without some consideration of these matters, yet this often seems to be true.

Some of the most pressing problems in the field of research ethics center around the question, "Are the proposed risks in research legitimate?" For example, to what extent does one have the right to use an untried method of instruction? On the other hand, to what extent is one obligated to try out new methods of instruction in order that progress might be made? While it is true that we are a long way from knowing everything that could be known about education, certainly we have gathered, over the years, a considerable body of experience which has been tried, tested and found effective at least to a certain degree. Do the child and his parents have the right to expect that the school will make use in its instructional program of those methods and procedures which have been found somewhat productive, or is the child's school experience to be a testing ground for untried, albeit promising, hypotheses? Of course, it is highly unlikely that in any situation, schooling would be all one or all the other, but it seems readily apparent that a decision as to how much of one and how much of the other is proper and fair, is one that the researcher must make. Knowledge that a certain hypothetical procedure is not efficacious is important research knowledge to gather, but what is the effect on the learner whose opportunity to learn has been impeded by the research process (the process to produce the information that the procedure in question was not efficacious)? Would the deprived learner have legitimate grounds for complaint, and would his parents?

Let us examine such a situation. One hypothesis currently being investigated is that certain types of background music affect the accomplishment and behavior of children. In this investigation three groups of third grade children are being taught while a tape recorder plays "mood music" selected for its rated emotional effect. The hypothesis is that such a procedure will reduce tensions, and thereby

reduce emotional difficulties. At the same time it is expected that the amount and rate of learning will not be adversely affected if not increased.

If the hypothesized results are achieved no one can complain legitimately. However, there would be no point in the investigation if the expected results were sure to occur. Suppose instead that the outcome is that the music proves to be irksome, that emotional tensions increase and the amount and rate of learning are decreased. Would the parents have just cause for complaint since in this instance they were not involved in the decision to investigate?

On the other hand, all of what we now know about instructional procedures and processes has come as the result of trying and testing, eliminating and adding in an essentially research approach. To what extent then does the learner bear a part of the burden of extending knowledge as to how learning takes place?

In the case just cited it seems readily apparent that if the hypothesized results are achieved a valuable addition to our resources in dealing with the emotional and instructional problems of children will be available.

Are the risks being taken by the three groups of third graders justified in the light of the possible benefits to all children in future years? A nice question but one not easy to answer.

From what has been said it is probably obvious that the author does not believe that the school is free to be indiscriminate with respect to the number of hypothetical procedures which are being tested at any one time. The amount of schooling which a child enjoys in our society is rather definitely fixed, and there seems to be a limit to the amount of time which can be devoted to untried procedures. It would seem that the child, his parents and others involved in the responsibility for his education should have a reasonably clear conception as to the nature and extent of the risks involved in research procedure and should be willing to accept those risks before research procedures are inaugurated. This involves their having an understanding of the nature of the hypotheses involved so that the probability of successful accomplishment may be seen by all and the burden of decision shared.

Such a point of view can be construed as somewhat inimical to the extension of research. To a certain extent it is, but the author has had enough experience to know that a few misunderstood risks that backfire are not only inimical to extensive research but tend to make any research impossible.

Expectations of the Learner

Another dimension of this problem comes from the attitude and expectations of the learner in the school situation. If a child enters school expecting that he will learn how to read in the first grade, to what extent is he able to operate in a situation where reading is not a part of his curriculum and where the school activities are foreign to the expectations which he brings to school? Readiness to learn seems as much a function of attitude as a function of maturity. Disappointment is likely to arise when realities are not compatible with expectations. All of this has a profound effect upon the learning process. To what extent then is the researcher free to disregard the expectations of the learner in a given situation? If he is not free to disregard these, to what extent and in what way should he operate to modify expectations? Having done this, what effect does that have on the validity of the conclusions drawn?

Such expectations take many forms. They may be concerned with content, instructional procedures, methods of control, types of activities, status relationships or a host of other aspects of school life. Even though unrealistic, these expectations must be understood and taken into account in any appraisal of a situation.

It seems important to the author that more attention should be given to the expectations of the learner in any learning situation. In a research procedure, either the children or their parents, or both, should be shown how the proposed procedures are essentially in harmony with the expectations of the learning group, or those expectations should be modified consciously prior to the beginning of the research procedures. In such a case, the modification of expectations becomes an important part of the research procedure and must be clearly indicated and taken into account in appraising the results of the experimentation.

Interpretation of Data

Another ethical problem revolves around the interpretation which is made of research data. Suppose that a survey of academic achievement shows that a deficiency in certain areas is present. This deficiency, of course, would need to be explained. If one's explanation is that this is a temporary loss due to a situation which has already been corrected, then the question naturally arises, should the results of the survey be published? Would anything be gained by having the

question raised publicly, when in the opinion of the researcher the cause of the lack of achievement has already been established and the situation corrected? How comfortable can one interested in research be in not making these facts available? If they are published, how should this be done? Will the explanation that the situation has already been corrected suffice? To what extent can we place confidence in our assessment of the cause of such lack of achievement, especially when an adequate explanation of this fact is probably primary to a successful interpretation of other factors in the research situation?

Objectivity and honesty seem to call for a full report of the results of research and the researcher will have to satisfy his conscience if he has no other problem when information is withheld.

On the other hand, suppose the accomplishment is substantially above that which is expected. Are we justified then in taking credit for the substantial increase in achievement which was not anticipated and which presumably was not reasonably expected to be the result of the procedures involved? Should we be as assiduous in trying to find external factors which might cause substantially better performance than was anticipated, as we are in seeking such explanations for performances which are not up to our expectations?

In a procedure as complex as social research, it seems to the author that we are ethically obligated to devote a great deal more attention to the factors in the situation which might conceivably affect the results and which have not been completely planned for or taken into account in the establishment of the research hypothesis. This probably will involve a higher degree of tentativeness in the conclusions drawn than is presently ascribed to social research. Such a fact undoubtedly will result in even more criticism of the process as one not leading to verifiable knowledge, but it seems imperative that we be honest in our interpretations to the extent that is humanly possible, even though we may, in doing so, find ourselves less able to be dogmatic and positive.

Research in a Complex Human Situation

The concept of the single variable, useful as it is in physical science, is practically impossible to apply in social research. Human behavior seems to be the result of the interaction of a pattern of complex variables, many of which are difficult to discover, much less control. The most that can be accomplished seems to be to describe as fully as possible these factors in the situation and phrase our conclusions in such a way as to take the variables into account.

In all of the complex maze of conflicting pressures that cause adolescents to behave as they do in any situation it would be difficult to pinpoint some experimental procedure as being more than one of the factors in changed activity. For example, how the experimental procedure was introduced, who introduced it, when it was introduced or the result of last week's basketball game might conceivably have as much to do with the results obtained as the hypothesized procedure itself.

Social research is carried on within a complex human situation. The data achieved are frequently not of a precise and tidy nature and consequently many problems arise in terms of the methods by which such data are handled, and the form in which they are reported. Some amount of interpolation and extrapolation is frequently necessary in order to give meaning to the data. We are somewhat short of adequate guides as to how and to what extent such interpolations and extrapolations are to be made. It is natural, and to some extent proper, that the hypothesis under examination determine the modification and arrangement of the data gathered. There is always the danger, however, that such a procedure would violate the ethics of research unless the danger is specifically recognized and proper caution is exercised to avoid a biased or one-sided presentation.

As an example, the author recalls one occasion when two sociograms, one taken before and one considerably after a modification of procedure was instituted in a class, showed markedly improved class interaction. The assumption was that the procedure used was the cause of the change in the reaction pattern, and also that there was a gradual but continual improvement over the period of time of the experimentation. The conclusion was further drawn that continued application of the procedure described would result in continued improvement in the interaction pattern. It was not until he was thinking about the material for this chapter that the author had even doubted that such an interpretation was a valid and fair one.

Upon reconsideration he must admit that there was no evidence to support the contention that the change was a gradual one or continuous one, or that it gave any promise of being further extended by continued application of the experimental procedure. His predetermined conviction was so strong that it certainly, in this instance at least, colored the interpretation of the data, colored the presentation of the data and was responsible for questionable, to say the least, interpolations and extrapolations.

Publication of Results

Another problem in educational research is the question of when, and when not to publish. There are two types of situations which in the experience of the author tend to mitigate against publication. The first, and by far the least frequently encountered, is a sort of possessive attitude on the part of members of a research group that they have put in the time and effort needed to discover what they have found out, and consequently they would like to reserve it for their own exclusive use. Such an attitude is inconceivable in the true spirit of research since all that we now know has come as the result of the sharing of experiences among those who have been interested in the solution of problems. We are all the recipients of the heritage of those who have gone before us and do have responsibility to share with others what contribution we, ourselves, can make to the common pool of knowledge. Any reluctance to publish on a basis as selfish as this can only be caused by a misunderstanding of the nature and importance of research in modern life.

The second, and by far the more common reason for lack of publication, is the feeling on the part of the research group that its findings are so insignificant as to be unworthy of dissemination. It is true that the number of journals and avenues of publication available to research groups is somewhat limited and that some value judgments as to the significance of the research must be made within the limited means of publication presently available. However, the ASCD is pointing the way to greatly increased publication of research findings through informal research letters and other similar devices which have been sponsored by some of the state and regional groups. The crying need is for more means of communication of research findings and for more willingness on the part of people who have done careful research to go to the additional trouble which is necessary to make their findings available to others.

By-Products of Research

One of the reasons why educational research is so fascinating is that there are frequently many byroads and by-products of research which are as interesting and revealing as the information with regard to the original hypothesis which was being tested. Such by-products, in addition to being interesting, can also sometimes become somewhat embarrassing and puzzling. For example, in one study of means of developing a curriculum improvement program within a school,

it became apparent that some of the unfortunate personal traits of the school principal were creating a barrier which would make even the most inane and simple hypothesis untestable. The principal, completely unaware of the problems he was creating, was one of the most eager individuals with regard to desirability of the curriculum improvement program. This raised a question as to what extent he should be informed of the effects of his own personal idiosyncrasies. If he should be informed, who should do it, under what circumstances, and in what way? It seemed obvious that certain preparations should be made to enable him to be able to receive criticism without detriment to the research program. Yet most of the people involved were at a loss to know how to go about it, especially since personal characteristics of the principal were not seen as one of the major areas of investigation in the original concept of the study.

On the other hand, in another case in the same city, the whole study was based on personal characteristics of the supervisory officers and principals, and their relationships to in-service growth and development of the faculties with which they worked. In this case, the entire group was not only prepared for, but expected that this particular type of investigation would be conducted.

Very nice and ticklish problems can arise out of some of these situations. Even the clinical psychologists, who make a speciality of decisions of this sort, have difficulty in determining what information should be considered clinical and confidential, and what is important to the solution in general problems and thereby should be reported and discussed in the research.

It is probably apparent from what has been said that all of the subjects in an educational research project should be intelligent about the nature of the project, the hypothesis being tested and the types and kinds of data being gathered. However, there are many studies which demonstrate that the increased personal significance which people feel from being involved in an experiment alters substantially their concept of their place in the scheme of things. Thus the results are not completely reliable when applied generally where the exhilaration of being involved in an experimental process is not present. To what extent are we justified in using students and faculty members as unwitting guinea pigs? Can we excuse this type of procedure on the grounds that their awareness of the nature of the research would invalidate the findings and make these less generally applicable? Or can we justify giving full information with a general conclusion that people will do better and behave more intelligently

if they know what they are doing and why they are doing it? You tell me.

This is a short chapter. It has been made so deliberately. Questions are frequently short, the answers often long. In the delicate but delightful task that we have chosen of working together to improve our behavior, our responsibilities to each other warrant careful consideration. But they too are not simple obligations clearly seen, rather they are intricate patterns as fragile as cobwebs. Tennyson says that "knowledge comes but wisdom lingers." As we gain our knowledge let's look for some of the lingering wisdom that gives knowledge character.

Appendixes

THE TWO APPENDIXES included in this yearbook are, we think, contributions to educational literature that are worthy of the attention of the members of the Association for Supervision and Curriculum Development. Appendix A, which is in three parts, first calls to our attention several examples of curriculum research, proceeds then to offer a brief account of the sources available to meet various kinds of research problems and also offers a condensed bibliography of reference guides. Appendix B is a report of the first Cooperative Curriculum Research Institute, held at East Lansing, Michigan, in 1955. This institute was jointly sponsored by the Association for Supervision and Curriculum Development, the Horace Mann-Lincoln Institute for School Experimentation of Teachers College, Columbia University, the Teachers College (Columbia University) Center for Improving Group Procedures, and the National Training Laboratories for Group Development. The institute was a pioneering attempt at bringing together the insights of curriculum research and those of group dynamics. A second such institute was conducted at Pere Marquette State Park, near Grafton, Illinois, in 1956, this time sponsored by ASCD and led by the chairman of its Research Commission, with the cooperation of several other educational agencies.

The Yearbook Committee concluded that the report and evaluation of the first institute had sufficient general interest to include it here. Both the content of the institute and the methods used for evaluating it will be of interest to those who conduct in-service programs. This description will also be of interest to those who wish to conduct similar institutes elsewhere.

Appendix A

Bibliography on Curriculum Research

Ruth M. Larson

Section I: Some Research Studies

THIS BIBLIOGRAPHY includes some exemplary curriculum researches which have had, or promise to have, significant impact on curriculum theory and practice. Knowing them will provide you with some useful principles for analyzing problems in your local curriculum studies. Also, you will gain from them understanding of a variety of research methods and techniques that will help you in planning more productive research.

Planning this bibliography involved some difficult choices. A brief look at some of the considerations required in the selection of items will help you in seeing the relation of this list to the larger field which it represents. First, it was necessary to separate curriculum research from research in other areas which bear upon curriculum theory. Fundamental research in such disciplines as psychology and anthropology has contributed concepts for helping us to deal with curriculum problems more effectively. These concepts may be concerned with variables to attend to, or with procedures to follow in school situations. Examples of such concepts,[1] along with studies from which they

[1] This is a list of some current concepts which are widely used in education, along with major studies or summaries of major studies from which they were derived. The meanings of most concepts have been developed from many studies; consequently, further exploration is necessary to understand the backgrounds from which they have emerged.

ATTITUDE: G. W. Allport, "Attitudes." In C. Murchison, editor, *A Handbook of Social Psychology*. Worcester: Clark University Press, 1935. p. 798-844. (This is not a report of experimental work; rather, it represents the culmination of early research in attitude measurement and remains the definitive work in this field.)

AUTHORITARIANISM: Theodore Adorno and others. *The Authoritarian Personality*. New York: Harper and Brothers, 1950.

CULTURE: Ruth Benedict. *Patterns of Culture*. Boston: Houghton Mifflin Com-

have been derived, are given in the footnote below. Through systematic studies in school situations, curriculum researchers clarify and extend the meanings of these concepts so that they become more useful to curriculum workers. Sometimes it is difficult to make a differentiation between the two types of research. In this listing most of the references are curriculum researches. However, there are a few which can be classified otherwise.

Another consideration involved in selecting items was whether or not the research project represents fundamental or action research. These types of research should be conceived as representing the ends of a continuum rather than separate and distinct categories. Currently, fundamental research is identified according to the purpose of its design, which permits generalizations from a sample to the large population from which the sample has been taken. Action research design is focused upon the solution of problems in a particular school situation and no claims for generalizations about other school situations are usually made. Thoughtful analysis of the research studies included in this list will bear out the point that distinctions between fundamental and action research are not always made easily. It was considered desirable to have varieties of these different types of research represented in this bibliography.

Finally, the following questions were asked about the selections, both individually and as a list:

1. Are the selections related to major educational objectives; such

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pany, 1934. Also, see Abram Kardiner and others, *The Psychological Frontiers of Society*, New York: Columbia University Press, 1945.

DEVELOPMENTAL TASKS: Robert J. Havighurst and others. *Human Development and Education*, New York: Longmans, Green and Co., 1953.

EGO-INVOLVEMENT: Muzafer Sherif and Hadley Cantril. *The Psychology of Ego-Involvements*. New York: John Wiley and Sons, Inc., 1947.

GROUP ATMOSPHERE: Ronald Lippitt. "An Experimental Study of Authoritarian and Democratic Group Atmospheres. Studies in Topological and Vector Psychology. I." *University of Iowa Studies in Child Welfare* 16:44-195, 1940.

INTELLIGENCE: Three points of view must be acknowledged here. See Alfred Binet, "Le Developpement de l'Intelligence chez les Enfants," *L'Annee Psychologique*. 14:1-94, 1908; Charles Spearman, *Abilities of Man*, New York: Macmillan Company, 1927; and L. L. Thurstone, *Primary Mental Abilities*, Chicago: University of Chicago Press, 1938.

LEVEL OF ASPIRATION: J. D. Frank, "Some Psychological Determinants of the Level of Aspiration." *The American Journal of Psychology*. 47:285-93, 1935.

SOCIAL CLASS: Allison Davis. *Children of Bondage*. Washington, D. C.: American Council on Education, 1940.

SOCIOMETRICS: J. L. Moreno. *Who Shall Survive?* Washington, D. C.: Nervous and Mental Disease Publishing Company, 1934. (Monograph Series No. 58)

VALUES: W. I. Thomas and Florian Znaniecki. *The Polish Peasant in Europe and America*. Chicago: University of Chicago Press, 1918.

as, the development of critical thinking, social learnings and self-understanding?

2. Do the selections direct attention to significant factors which must be considered in any attempts to achieve these objectives?

3. Are the selections representative of fine curriculum research?

If this list engages your attention and directs your further exploration of curriculum research, its major purpose will have been fulfilled.

COLLINGS, ELLSWORTH. *An Experiment with a Project Curriculum.* New York: Macmillan Company, 1923.

This early experimental work in a one-room rural school included several big ideas. The school's curriculum was planned according to the interests and problems of the children. The school was conceived as an integral part of community life. Collings expected it to make a difference in the attitudes and conduct of both the children and adults of the community. This was a four-year research project, which gave time for major curriculum changes to be made and their effectiveness appraised. The project curriculum in the experimental school was compared with the subject matter curriculums of two control schools. Comparisons of the pupils' school achievements, the conduct and attitudes of both pupils and parents, and improvements in community facilities provided evidence for the effectiveness of the new type of curriculum. Another particularly interesting feature of this study is that Collings was the superintendent of schools in the county during the time of the research. This combination of educational leadership and formal scientific inquiry is a reminder of at least one alternative pattern for field research in curriculum.

CUNNINGHAM, RUTH, AND ASSOCIATES. *Understanding the Group Behavior of Boys and Girls.* New York: Bureau of Publications, Teachers College, Columbia University, 1951.

The successful combination of school research and basic psychological theory described in this book is remarkable. The theoretical significance of the study lies in the descriptions of the fundamental importance of goals in determining behavior and the effects of goals in group interaction. The methodological significance lies in the descriptions of the ways that the teachers, pupils, parents and consultants worked together on their common problems. When adults and children cooperate in research designed to find better ways to develop children's understanding of themselves and others, something of historical significance is occurring. Problem-solving projects can be viewed from their beginnings of problem definition to the use of

various research techniques to the organization and analysis of data. This exploratory research has resulted in a large stockpile of information and techniques for teaching and classroom research, which can be useful at any level of education.

DIMOND, STANLEY E. *Schools and the Development of Good Citizens: The Final Report of the Citizenship Education Study.* Detroit: Wayne University Press, 1953.

It is certainly a contribution to have described in the variety of researches reported here the successes and failures of school staffs in trying to fulfill school responsibilities for citizenship education. Three ideas were central to the study: (a) emotional adjustment is necessary for developing good citizenship; (b) democratic ideals can be taught; and (c) problem-solving skills essential in citizenship can be taught. Researches were conducted in elementary, junior high and senior high schools in widely differing localities in Detroit. One of the central features of the research was that it involved, for the most part, widely accepted school practices; for example, in one situation an attempt was made to measure the effectiveness of dramatic films in changing boys' and girls' attitudes. It is quite helpful to have the author's critical descriptions of the relatively unsuccessful attempts to compare the effectiveness of various school practices in achieving certain school objectives. It will be as important for us to ponder deeply on these failures as it will be to make use of the things gained from this extensive and long study.

FAWCETT, HAROLD P. *The Nature of Proof: The Thirteenth Yearbook* of The National Council of Teachers of Mathematics. New York: Bureau of Publications, Teachers College, Columbia University, 1938.

The kind of pioneer work described in this report reminds us that any teacher can become an educational frontiersman; that is, if he can approach his teaching responsibilities with originality, clear and sharp thinking, and a sincere desire to fulfill his professional ideals. The author designed a high school mathematics course, "The Nature of Proof," which gave students many opportunities to work critically with consequential theoretical problems. This took the place of a geometry course. The evidence collected indicated that the students not only achieved skills and information presented in a typical geometry course but also made significant improvements in their critical thinking. This is an example of school research that is more significant for its quality of analysis and suggestions for teaching than for its experimental design and the resulting evidence.

FOSHAY, ARTHUR W.; WANN, KENNETH; AND ASSOCIATES. *Children's Social Values: An Action Research Study.* New York: Bureau of Publications, Teachers College, Columbia University, 1954.

This book deals with some common problems of teachers in uncommon ways. How often teachers have wondered how to help children to become more generous, more considerate, more dependable and honest, and more democratic. The associate authors were teachers who tried some classroom research to deal more effectively with these intangibles. One of the central ideas was that problems must be stated in specific behavioral terms; such definitions were progressively achieved with the help of empirical data collected by the teachers. Their work led the authors to the thought-provoking conclusion that attitudes can be taught as well as caught. Another important aspect of the study was the evaluation of the three-year research project. The results led the authors to reaffirm their assumptions that curriculum change is a consequence of change in the teachers' conception of curriculum and that cooperative action research is an effective way of achieving such change. Both strengths and weaknesses of the cooperative work have been discussed and can help others in planning such projects.

FRIEDMAN, BERTHA B. *Foundations of the Measurement of Values.* Contributions to Education, No. 914. New York: Bureau of Publications, Teachers College, Columbia University, 1946.

Whether or not you agree with its purposes and rationale, you will find this research report profitable. It is a classic piece of work, representing the kind of research the major purpose of which is to conceptualize an area of study. After exploring theories of value and reviewing major principles and processes in measurement, the author tackles the problems of locating and measuring values. Some of these are whether or not overt behavior and verbal statements are adequate indices of value, whether or not values can be quantified and what kinds of scales are appropriate for measuring values. These and other problems are dealt with in a way that clarifies basic issues relevant to them. The theoretical analysis culminates in a study based on questionnaires which reflect the author's chief conclusions in her preceding work.

HARTSHORNE, HUGH; MAY, MARK; AND SHUTTLEWORTH, FRANK. *Studies in the Nature of Character; Vol. III, Studies in the Organization of Character.* New York: Macmillan Company, 1930.

The Character Education Inquiry was a five-year study, the central purpose of which was to establish reliable and valid procedures for

studying character. The reports from this project are in three volumes; only the third is included here because it includes the major significant findings of the earlier volumes and also the culminating work and general conclusions from the total research program. In order to measure conduct, knowledge, opinions and attitudes, many tests were devised, the results of which were analyzed statistically for various purposes. Modes of conduct studied were deceit, helpfulness and cooperation, inhibition and persistence. This research represents the best of the measurement movement. Many of the significant findings are relevant to our contemporary problems in this area of research and teaching.

HAVIGHURST, ROBERT J., AND TABA, HILDA. *Adolescent Character and Personality.* New York: John Wiley and Sons, Inc., 1949.

The Prairie City studies have produced a wealth of information which both directly and indirectly applies to curriculum theory and practice. This particular volume reports an intensive study of character in sixteen-year-old boys and girls in a small Midwestern community. The major questions studied were: (a) To what extent is character development influenced by the value systems of the social groups to which the individual belongs? and (b) How is character development influenced by the quality of emotional relations with parents, other adults and age mates? The cooperation of persons from various academic fields throughout this research project produced significant findings concerning the interrelations of social and personal factors in character development. Researchers in this area who are searching for various kinds of data-gathering instruments will find this report exceedingly helpful. Not only workers in secondary education but also in elementary should be exposed to its thought-provoking findings and conclusions.

JERSILD, ARTHUR T. *In Search of Self.* New York: Bureau of Publications, Teachers College, Columbia University, 1952.

The author's major concern is the impact of school experiences on learners' developing self-concepts. The empirical data in this study came from the compositions of three thousand children and youth who were writing on two subjects, "What I Like About Myself," and "What I Dislike About Myself." Jersild speculates astutely on the meanings of the data and spells out some of the implications for school practices. This kind of exploratory research has two important functions. First, it produces any number of hypotheses for further research. Secondly, it helps us in understanding children's language of the self.

MIEL, ALICE, AND ASSOCIATES. *Cooperative Procedures in Learning.* New York: Bureau of Publications, Teachers College, Columbia University, 1952.

It is difficult to find play-by-play descriptions of recommended teaching procedures. It is even more difficult to find such descriptions organized on the basis of problems which teachers face in utilizing the recommended procedures. This book has both. The descriptions are not artificial but have been taken from situations in which teachers and consultants were working together on problems of teacher-pupil planning. Along with the play-by-play descriptions is a running commentary so that readers can see especially the teacher's role through the process. Chapters on developing children's group membership skills and on pupil leadership remind us that children must learn to work together effectively. Many different planning situations are described, which should provide an antidote for the "all or nothing at all" notions of the use of cooperative planning in the classroom. This type of descriptive research which clarifies ways of working in the classroom is of tremendous value, both practically and theoretically.

SMITH, EUGENE R.; TYLER, RALPH W.; AND THE EVALUATION STAFF. *Appraising and Recording Student Progress.* New York: Harper and Brothers, 1942.

Any one of the reports of the Eight-Year Study holds much challenge for contemporary curriculum work and research. This has been selected because the problems with which it deals lie at the heart of curriculum research. Contemporary educational workers will find many well-known problems dealt with in an astute and skillful manner. For example, parts of the report deal with the construction of evaluation instruments, with the interpretation and use of research data, and with planning and administering evaluation programs for the core curriculum. Chapters on critical thinking, social sensitivity, appreciation and interest, and personal and social adjustment have wide currency today both conceptually and methodologically. There is heavy emphasis on the construction of instruments, which can have both direct and indirect applications in contemporary developments of research techniques.

TABA, HILDA. *With Perspective on Human Relations.* Washington, D. C.: American Council on Education, 1955.

This is a report of an action research project in which the author and a classroom teacher worked together to improve the social learnings of the eighth graders involved. In this study you will find a combination of effective teaching procedures and contemporary human

relations theory that produced encouraging success in the redirection of classroom living. The students achieved some significant learnings about themselves and their peers. To have this actualization of our faith in democratic procedures for changing children's social attitudes and relations is of utmost importance. It serves to strengthen the position of those who claim great things for action research, as well as to guide our future work in translating our ideals into practice.

WRIGHTSTONE, J. WAYNE. *Appraisal of Newer Elementary School Practices.* New York: Bureau of Publications, Teachers College, Columbia University, 1938.

In this research, attempts were made to collect evidence of the achievement of several major instructional objectives. This kind of study is quite complicated; the author himself would probably be the first to point to weaknesses as well as to strengths of his work. The strengths have to do with the careful development of the rationale and design and with the evidence which was obtained from the variety of tests used. The weaknesses have to do with the adequacy of the design for exploring specific relationships between the evidence and the factors which may have produced it. No one has solved the problems of sampling and control in this kind of curriculum research, so that the challenge remains for any who would accept it. The quality of the evidence from this research is impressive enough to give justification to our faith in newer elementary school practices, at least at a global level. Also, it is impressive enough to direct our attention to the importance of furthering this kind of research.

Section II: Research Methods and Techniques

One of the major ideas in this book is that curriculum workers can be good researchers. This idea really comes alive when one sees members of a school staff gain confidence in themselves as they deal successfully with their own research problems. As with any other learnings, it is important to begin planning at the level appropriate for your abilities and to work forward in the best way possible. Your own professional wisdom and your ingenuity, combined with special information of various kinds, will enable you to recognize problems, plan how to deal with them, and appraise the effectiveness of what you did.

The materials listed in this bibliography will provide special information which can help you to develop more understanding of and facility in the use of research methods and techniques. The items satisfy one or more of the following criteria of selection:

1. Does the writing present some important ideas that contribute to a deeper understanding of the functions of research procedures in curriculum development?

2. Does the writing deal with some basic problems underlying the use of research in school situations?

3. Does the writing present and explain principles of planning and conducting curriculum research?

4. Does the writing explain clearly and accurately the way to use particular research techniques and/or how to handle data?

5. Has the writing proved useful to on-the-job curriculum workers?

This list is only a representative sample of many fine books and articles in this field. One of the major purposes in compiling it has been to cover a wide range of methods and techniques; there are the more complex and technical methods and the rather simple and nontechnical ones. The annotations will help you to find what you need.

There are four sections in this bibliography: comprehensive surveys; theoretical problems in research; techniques for collecting and analyzing data; and statistical methodology.

1. Comprehensive Surveys

a. BARR, ARVIL S.; DAVIS, ROBERT A.; AND JOHNSON, PALMER O. *Educational Research and Appraisal.* New York: J. B. Lippincott Co., 1953.

This book deals with three major topics: (a) bases for selecting and developing dependable techniques for collecting data, (b) nonmathematical methods of research and appraisal and (c) statistical methods. Illustrations from educational research and the author's clear explanations of technical subjects will help you to understand many research principles. Bibliographies organized according to chapter topics are in the appendix.

b. FESTINGER, LEON, AND KATZ, DANIEL, editors. *Research Methods in the Behavorial Sciences.* New York: The Dryden Press, 1953.

The major sections of this book include research settings and design, sampling procedures, techniques of collecting and analyzing data, and the application of research findings. The technical language in some of the chapters makes for difficult reading, but it will be well worth the while if you are concerned with basic theory and with newer developments in social research. There are lists of references at the ends of the chapters which provide leads to valuable information about research techniques.

c. GOOD, CARTER V., AND SCATES, DOUGLAS E. *Methods of Research: Educational, Psychological, Sociological.* New York: Appleton-Century-Crofts, Inc., 1954.

The authors have combined descriptions of research methods with theoretical speculations and summaries of research findings. The volume is almost encyclopedic in scope. The chapters on surveying related literature and reporting research provide many specific suggestions that will be invaluable to the research novice. One of the most important features of this book is its extensive bibliographical information, organized around a multitude of topics in education and research.

d. JAHODA, MARIE; DEUTSCH, MORTON; AND COOK, STUART W. *Research Methods in Social Relations: Volume I, Basic Processes; Volume II, Selected Techniques.* New York: The Dryden Press, 1951.

Volume I describes major steps in the research process from problem definition to the application of research findings. Volume II deals in more detail with specific techniques for collecting and analyzing data. Both books are eminently practical. Illustrations from researches in prejudice provide much food for thought. Both volumes contain the same bibliography, an extensive list of references including both research reports and methodological essays on social research.

2. THEORETICAL PROBLEMS IN RESEARCH

a. COREY, STEPHEN M. *Action Research to Improve School Practices.* New York: Bureau of Publications, Teachers College, Columbia University, 1953.

This is an enthusiastic and clear presentation of action research procedures and the author's reasons for advocating them. Whether you are primarily interested in theoretical issues or in fresh suggestions for curriculum work, you will find this book thought provoking. Notes on references at the ends of chapters and the long bibliography suggest many starting points for further exploration of the principles and practices recommended.

b. FOSHAY, ARTHUR W., AND GOODSON, MAX R. "Some Reflections on Cooperative Action Research." *Educational Leadership* 10:411-18; April 1953.

The significant idea in this article is that action research can contribute to the development of "middle ground" principles, which are described as generalizations relating basic theory to problems of teaching. These principles provide directives for analysis and work in a classroom situation. The implications of this idea for future research methodology and its rationale need to be spelled out in further study and research.

c. FRENCH, DAVID G. "The Logic of Evaluative Research." *An Approach to Measuring Results in Social Work.* New York: Columbia University Press, 1952. p. 44-73.

This introductory description of the steps in evaluative research is simple and to the point. Included are reviews of research in social work which illustrate various research problems, such as, how to deal with reliability and validity and whether or not such research can be functional in solving practical problems. There will be no difficulty in finding the relevance of this chapter to problems in curriculum research.

d. HOOK, SIDNEY. "The Centrality of Method." *Education for Modern Man.* New York: Dial Press, 1946. p. 112-38.

Does the scientific method help to nurture basic cultural values or lead to their demise? Can we deal with problems of value in a significant and positive way with the scientific method? Sooner or later the educational researcher will meet these perennial questions in some form. This chapter offers some astute interpretations of such questions that support the usefulness of the scientific method in the nurture and development of values.

e. JAHODA, MARIE, AND OTHERS. "Research and Theory." p. 324-39. See Section 1-d of this bibliography.

This is a clear explanation of a point of view about the interrelations of research and theory. It will be helpful to read this along with other references in this section to gain perspective for a wider understanding of the problems which each poses for the other.

f. KAUFMANN, FELIX. *Methodology of the Social Sciences.* New York: Oxford University Press, 1944.

This gives a comprehensive view of theoretical problems in social research, all of which also underlie educational research. Some of the major subjects considered are the relations of language and meaning, of truth and probability, and the problems of objectivity and value judgments in science. Chapter V may be of particular interest because it concerns the ideals of science and the functions of preference rules in scientific procedures. To read some of the chapters an understanding of logical terminology is necessary.

g. MOONEY, ROSS. "Groundwork for Creative Research." *The American Psychologist* 9:544-48; September 1954.

This is an unusual approach to research problems. The basic question is how does a researcher deal with himself through the research process. Mooney points out that the researcher cannot divorce himself from research activity in a kind of illusory objectivity. Through

intelligent and sensitive awareness of himself the researcher can become more significantly productive. This surely is a frontier area in research and challenges some of our stereotyped ways of thinking about it.

h. STANLEY, WILLIAM O. "Approaches to a Disciplined Methodology of Discussion." *Education and Social Integration.* New York: Bureau of Publications, Teachers College, Columbia University, 1953. p. 207-28.

Too often scientific inquiry is considered apart from its social context. The author recommends a methodology which, he believes, will help in resolving problem situations made crucial because of conflicting social factions. One of the interesting features of this chapter is the list of criteria for testing the adequacy of the practical judgments of a group.

i. WESCHLER, IRVING R., AND BROWN, PAULA, editors. *Evaluating Research and Development.* Los Angeles: The Institute of Industrial Relations, 1953.

This is a report of the proceedings of a conference of research administrators, who were concerned with the development of a framework for evaluating research projects and the performance of researchers. The definitions and principles applied, as well as the problems discussed, provide fertile materials with which to think about problems in educational research.

3. TECHNIQUES FOR COLLECTING AND ANALYZING DATA

a. AMERICAN COUNCIL ON EDUCATION. *Helping Teachers Understand Children.* Washington, D. C.: the Council, 1945.

Teachers who are familiar with this book will have a good start for conducting classroom research. Sociometric techniques and anecdotal records are described and illustrated in detail. The guides for interpreting data (p. 185-98) are excellent and have application beyond the context in which they are presented.

b. BARR, ARVIL S.; DAVIS, ROBERT A.; AND JOHNSON, PALMER O. "Criteria of Measuring Instruments." Chapter IV. p. 90-123. See Section 1-a of this bibliography.

Logical and empirical validity and also reliability of a variety of data-collection techniques are considered. The presentation will facilitate understanding of some technical principles, which should be helpful in using research techniques and analyzing data gained from them.

c. BUROS, OSKAR K. *The Fourth Mental Measurements Yearbook.* Highland Park, N. J.: The Gryphon Press, 1953.

There are two main parts in this reference book. The first one contains lists of commercially available tests along with reviews of them. The second part lists books about testing and some of their reviews. The material in this book covers the period 1948 to 1951 and is designed to supplement the information in earlier editions of the yearbook. This can be quite helpful for locating and evaluating tests.

d. CUNNINGHAM, RUTH, AND ASSOCIATES. "Techniques for Studying Group Behavior." *Understanding the Group Behavior of Boys and Girls.* New York: Bureau of Publications, Teachers College, Columbia University, 1951. p. 340-93.

This chapter will be particularly helpful for classroom teachers. It contains descriptions of many different techniques used by teachers involved in cooperative action research. Other chapters in the book will provide the context in which the techniques were used, thus making them even more meaningful.

e. FESTINGER, LEON, AND KATZ, DANIEL, editors. Parts III and IV. p. 241-577. See Section 1-b of this bibliography.

Part III contains chapters on objective observation, the use of various kinds of records, interviewing and procedures for observing group behavior. Part IV contains a chapter on the analysis of qualitative materials and two on measurement and statistics, which will be described in the section on statistical methodology. All of these chapters will contribute to your developing a framework of criteria for planning how to use the techniques described.

f. GOOD, CARTER V., AND SCATES, DOUGLAS E. "Organized Forms of Descriptive-Survey and Normative Research." p. 548-688. See Section 1-c of this bibliography.

Divided into three large sections, this chapter describes survey procedures; questionnaire and interview techniques; and small-group, observational and appraisal techniques. You will find a bird's-eye view of their characteristics, some of the problems in their use, and suggestions for organizing and analyzing the data gained from them. There are reference lists for each topic which will guide you to more detailed accounts of the techniques.

g. JAHODA, MARIE; DEUTSCH, MORTON; AND COOK, STUART W. *Selected Techniques. Volume II.* p. 423-641. See Section 1-d of this bibliography.

The chapters on interviewing are particularly well-organized and helpful for planning interview schedules and for conducting the kinds of interviews which will be successful. Other procedures dealt with are observational field-work methods, the systematic observation of small

face-to-face groups, content analysis and analysis of sociometric data. The chapter on sociometric analysis is rather technical, describing mathematical bases for index, statistical and matrix analyses.

h. LINDQUIST, EVERET F., editor. *Educational Measurement.* Washington, D. C.: American Council on Education, 1951.

This is a detailed reference work in the theory and techniques of testing. Most of the content is oriented to formal, standardized tests. Chapter 13 deals with essay tests, their advantages and disadvantages and ways of improving them.

i. MIEL, ALICE, AND ASSOCIATES. "Record-keeping and Cooperative Procedures." *Cooperative Procedures in Learning.* New York: Bureau of Publications, Teachers College, Columbia University, 1952. p. 436-54.

Teachers obtain much important information in discussions with their pupils, which can provide important data for research. In such situations data collection is a problem of recording information efficiently and accurately. This chapter suggests some techniques for this, many of which would be useful in a variety of teaching situations.

j. SELLS, SAUL B., AND ELLIS, ROBERT W. "Observational Procedures Used in Research." *Review of Educational Research* 21:432-49, December 1951.

This article summarizes the contributions made in this area of research methodology during the three years prior to the publication date. Direct recording of behavior, diary and case history technics, sociometric methods, rating technics, survey and opinion research procedures and interviewing and questionnaire methods are included. There is a long bibliography at the end of the article.

k. TABA, HILDA; BRADY, ELIZABETH HALL; ROBINSON, JOHN T.; AND VICKERY, WILLIAM E. *Diagnosing Human Relations Needs.* Washington, D. C.: American Council on Education, 1951.

The following techniques are described in this book: diaries, parent interviews, participation schedules, sociometric procedures, open questions, and teacher logs. One of the great advantages of this book is that these techniques are described and explained within the whole process of evaluation so that their uses and the applications of the findings from them make good sense. The writing is clear and the organization of content is easily followed.

l. WRIGHTSTONE, J. WAYNE; JUSTMAN, JOSEPH; AND ROBBINS, IRVING. *Evaluation in Modern Education.* New York: American Book Company, 1956.

Both testing and the newer techniques of evaluation are described in this book. The book was planned for practitioners, and it will make a good handbook to be consulted for summary information. There are annotated references at the ends of chapters.

m. ZEISEL, HANS. *Say It with Figures.* New York: Harper and Brothers, 1947.

This book deals with problems of analysis and interpretation of data. The first part suggests principles and procedures for classifying data. The second part deals with the summarization of data for presentation. The third part concerns the problem of interpretation of data, in which the author has tried to show the relationship of some research procedures to the processes in interpretation. The terminology is somewhat technical, but both illustrative materials and the author's style contribute to making this a very readable book.

4. STATISTICAL METHODOLOGY

a. AMERICAN EDUCATIONAL RESEARCH ASSOCIATION. "Statistical Methodology in Educational Research." *Review of Educational Research* 24:353-536; December 1954.

This periodical contains summaries of various areas in statistics along with extensive bibliographies in each area. The articles on scaling, discriminant analysis, decision theory and non-parametric methods provide a bird's-eye view of some of the most recent developments in statistical methodology. The articles are technical and require a background in statistics for understanding them.

b. BARR, ARVIL S., AND OTHERS. Chapters IX and X. p. 257-306. See Section 1-a of this bibliography.

Chapter IX deals with problems of prediction; Chapter X, with correlation analysis. Both help one to see beyond the techniques to the rationale underlying them. The writings presuppose some background in statistics for understanding them.

c. BROSS, IRWIN J. *Design for Decision.* New York: Macmillan Company, 1953.

This is one of the most readable books in statistics. Even if one does not understand all the mathematical theory (it is minimal), the author's point of view concerning decision making will be stimulating.

d. CATTELL, RAYMOND B. *Factor Analysis: An Introduction and Manual for the Psychologist and Social Scientist.* New York: Harper and Brothers, 1952.

This is one of the more understandable books dealing with factor analysis. It includes explanations of various analytic designs which represent differing points of view in this field. Computational methods are outlined in enough detail to provide directions for such work. The theoretical presentation helps not only in seeing the rationale of factor analysis but also in understanding analytical patterns for dealing with various kinds of problems.

e. COOMBS, CLYDE. "Theory and Methods of Social Measurement." p. 471-535. See Section 1-b of this bibliography.

The theoretical framework presented provides bases for planning and analyzing research. The first part of the chapter deals with the meaning of measurement, describes the different orders of measurement and discusses differences between scaling and measuring. The second part deals with a theory of data and describes various methods for collecting and analyzing data. For anyone wanting to get into basic theory in research this chapter will be important.

f. FESTINGER, LEON, "Assumptions Underlying the Use of Statistical Techniques." p. 714-26. See Section 1-d of this bibliography.

Students who have had a course in statistics will find this exceedingly profitable. An understanding of the rationale presented will help not only in making decisions about the appropriateness of certain statistical procedures for your research needs but also in asking more astute questions in planning research. Because the principles are clearly stated and well illustrated, the reading is not too difficult.

g. GARRETT, HENRY E. *Statistics in Psychology and Education.* Fourth edition. New York: Longmans, Green and Co., 1953.

The author's ability to write clearly about statistics and the organization of the subject matter facilitate the grasp of both statistical rationale and computational techniques. This is a fine reference book for practitioners. The major portion of the book is devoted to explanations of descriptive statistics; that is, to methods for describing group characteristics of the particular data observed.

h. HUFF, DARRELL. *How to Lie with Statistics.* New York: W. W. Norton and Company, 1954.

The author's purpose is not to condemn statistics; rather, he hopes that pointing out their fallacious uses will aid people in recognizing sound and usable data. The book is quite enjoyable and instructive, too.

i. JOHNSON, PALMER O. "Some Promising Newer Methods." *Phi Delta Kappan* 35:29-34, October 1953.

This article describes briefly and clearly some of the more recent developments in statistics; for example, sequential analysis, discriminant analysis, analysis of variance models, sampling procedures and fractional replication. This readable article provides an excellent opportunity for educators to gain a speaking acquaintance with experimental methods in research.

j. LINDQUIST, EVERET F., editor. Part III of *Educational Measurement.* p. 533-808. See Section 3-h of this bibliography.

Part III is devoted to measurement theory and includes detailed discussions of validity, reliability, scores and norms. Lorge's chapter on the fundamental nature of measurement is relevant not only to testing problems but also to other kinds of research planning.

k. LINDQUIST, EVERET F. *Design and Analysis of Experiments in Psychology and Education.* Boston: Houghton Mifflin Company, 1953.

This is a detailed and technical description of the methods and uses of analysis of variance. For those who can and wish to work at this level of research, the book is excellent.

l. MC NEMAR, QUINN. *Psychological Statistics.* Second edition. New York: John Wiley and Sons, Inc., 1955.

One of the most helpful features in this text is that it makes clear the assumptions basic to the use of various statistical techniques. Chapters on analysis of variance, non-parametric methods and probability and hypothesis testing are particularly helpful because of the concise and clear presentation.

m. THRALL, R. M.; COOMBS, C. H.; AND DAVIS, R. L. *Decision Processes.* New York: John Wiley and Sons, Inc., 1954.

More is included in this book than information concerning the particular statistical methodology represented by the title. It represents the kind of advanced work in mathematical psychology that has been developed in recent years. The possibilities of applying this kind of mathematical analysis in education should not be overlooked.

n. WALKER, HELEN M. *Mathematics Essential for Elementary Statistics* Revised edition. New York: Henry Holt and Company, 1951.

This book will be helpful for students who are at work in their first statistics course. Also, teachers and others who want to gain more understanding of statistics will find this exceedingly useful as a companion volume to a statistics text.

o. WALKER, HELEN M. "Statistical Understandings Every Teacher Needs." *National Education Association Journal* 43: 21-22; January 1954.

Dr. Walker has contributed many articles that have helped teachers and others in education to understand better how to use and interpret statistical concepts. This article is representative of the clear and down-to-earth explanations which have been characteristic of her contributions.

p. WALKER, HELEN M., AND LEV, JOSEPH. *Statistical Inference.* New York: Henry Holt and Company, 1953.

By using methods of statistical inference, researchers can generalize from sample data to the larger, unknown population which the sample represents. Those without a background in college mathematics will find this book especially helpful. The understanding of some difficult abstractions is facilitated by carefully developed and well-illustrated explanations.

Section III: Reference Guides for Your Research Needs

Locating research materials is not always easy. You will make it easier and save time too if you are as specific as possible in planning what you need. This depends upon the kinds of problems with which you are dealing. Perhaps you need more knowledge and understanding of the problem area within which you are working. Perhaps the research information can help you in stating a researchable problem. Perhaps by studying practical applications of various research methods, you will be better able to develop your own research methodology. Possibly the research materials can help you in making more penetrating interpretations of your data. Whatever the problems, you should have these clearly in mind so that they can help in guiding you through the literature of which there may be a bewildering quantity. Also, a clear understanding of the problems involved will provide flexibility so that important materials will not be missed because you are impaled on a limited concept of the research problems.

The following annotated list of references has been held to a minimum. The first part deals primarily with sources for obtaining general summaries of research concerning a particular problem area. The second part includes the basic reference guides which are most valuable for locating research reports for more specialized needs. Basic references can be used to find general summaries of research, but their use may not be the most efficient procedure. The third part suggests

more comprehensive guides for locating and using research materials. The suggestions which accompany the bibliographies should help in deciding which ones will best suit your purposes.

GENERAL GUIDES TO RESEARCH

One of the mistakes which some people make in undertaking a search for materials is to jump into extensive bibliographies with little comprehension of the scope and organization of their problem area. This is time-consuming and risky. It is much wiser to start from the solid ground of well-organized and comprehensive summaries. From any one of the following you can obtain dependable surveys of problem areas. Also, you can obtain bibliographical references which will be meaningful because you have gained acquaintance with them from the materials read.

Basic References in Education

MONROE, W. S., editor. *Encyclopedia of Educational Research.* Revised edition. New York: Macmillan Company, 1950.

This volume will provide you with background materials in any important area of educational research. It will help you to avoid the mistaken notion that the most recent research is necessarily the most significant research. Discussions of problems and evaluations of research accomplished will not only enlarge your understanding of an area, but also will help to sharpen your critical eye for the rest of your search.

Review of Educational Research. Official publication of the American Educational Research Association, Washington, D. C.: the Association, a department of the NEA. Vol. 1, January 1931—.

This periodical has been planned so that, generally speaking, the same major topic in education has been covered in one issue every three years. This source can scarcely be excelled for its presentations of contemporary investigations in education. One can gain speaking acquaintance with a variety of research projects and also a bird's-eye view of problems within the area. Extensive bibliographies are included.

Basic References in Closely Related Areas

Annual Review of Psychology. Stanford, California: Annual Reviews. Vol. 1, 1950—.

Published once a year, these volumes are organized on the basis of important fields in psychology. Each section includes brief descriptions of significant psychological investigations of the preceding year.

These can be highly suggestive for either the content or methods of your own research.

CARMICHAEL, LEONARD, editor. *Manual of Child Psychology.* Second edition. New York: John Wiley and Sons, Inc., 1954.

The comprehensive summaries of developmental trends in various fields of child psychology and of experimental work in past decades will provide any persevering reader with a tremendous background of ideas and leads for further investigation. Some of the content of the summaries is directly concerned with children's school experiences. That which is not may suggest interesting and significant research concerning the applicability of research findings in other areas to school situations.

LINDZEY, GARDNER, editor. "Special Fields and Applications." *Handbook of Social Psychology.* Vol. II. Cambridge: Addison-Wesley Publishing Company, Inc., 1954.

Experimental work and theory in social psychology often have important relevance to the kinds of research that educational workers undertake. Reading in this volume should stretch your perspectives, as well as your understanding of related problem areas in education. Motivation, learning, group problem-solving processes and other aspects of group interaction are some of the areas which may be of special interest.

Other Sources of Educational Research Summaries

Four important sources of research summaries are (a) your professional organizations, (b) the U. S. Office of Education, (c) various books and periodical articles, and (d) dissertations. For the educational worker who has no access to the materials and services of a professional library, the first three of these can be of inestimable value. They will be discussed briefly in this section. A later section deals with dissertations and theses.

Publications of your professional organizations. Yearbooks, pamphlets and research bulletins from professional organizations can be a great boon to the seeker after research summaries. But there are problems to be faced in the search. There is the problem of finding out what is available. Also, there is the problem of evaluating their contents, for they are of varying quality and have been written for a variety of purposes. Many of these publications do not deal with research. Because the National Education Association publishes so many materials and because its organization includes so many aspects of educational problems, the remainder of this particular section will deal with the publications of the NEA.

Locating particular publications of the National Education Association and its affiliated departments is not too difficult if you use *Education Index*. They are listed under subject headings of the particular area with which they are concerned; for example, there are subject headings, "Science concepts of children," or "School buildings." Also, they are listed under the name of the association, "The National Education Association." Under this main heading one finds subheadings, which are the various commissions and departments of the NEA; for example, "Department of Audio-Visual Instruction," or "Research Division." If you need to know about the organization of the NEA, the *NEA Handbook*[2] gives such information. It is published annually by the Association and can be obtained from the national office for one dollar. Often in the descriptions of the various departments and divisions there is mention of their recent publications. This can give you a clue to what is available but should not be considered adequate. If you do not have a professional library, then the most efficient way to obtain information concerning the publications of the NEA is to write directly to the national office for listings of their publications in the area in which you are working.

You can pursue just about the same procedure as described in the preceding paragraphs for locating the research publications of other educational associations. For a complete listing of educational associations consult the *U. S. Office of Education Directory*, Part IV.[3]

A discussion of problems concerning the evaluation of materials you use can be found in a section to follow which deals with books and periodicals.

Publications of the U. S. Office of Education. These publications are widely available and over a period of time will cover a considerable range of topics in education. Also, they are relatively inexpensive. One faces just about the same problems as were mentioned in regard to the publications of professional organizations.

You can use *Education Index* in somewhat the same way as described in the preceding section in order to obtain information concerning the publications of the U. S. Office of Education. If *Education Index* is not available to you, write to the U. S. Government Printing Office for a free listing of materials, *Selected Government Publications*. Be sure to mention the areas in which you are interested (broad areas such as education or public health). Although incomplete, these lists

[2] *NEA Handbook for Local, State, and National Associations, 1956-57*. Washington, D. C.: the Association, 1201 Sixteenth Street, Northwest, 1956.

[3] U. S. Office of Education. *Educational Directory*. Washington, D. C.: Government Printing Office, 1912—.

will suggest possible leads which, if followed, can help you to find other materials. If you request such, you will be put on the mailing list to receive future listings of government publications. Another publication of listings which may help is the *U. S. Government Publications, Monthly Catalogue.*

Finally, it is possible to write to the appropriate division of the Office of Education. The U. S. Office of Education's *Educational Directory,* Part I, will give you information concerning its organizational structure.

Books and periodical articles. Certainly there are both books and periodical articles which can give you a good bit of help in seeking better understanding of a problem area, as well as bibliographies which will lead you to some fine research materials. You may need to rely on such works because of their availability.

There are several ways of locating books that are related to a particular subject area. In the card catalogue of a library, books in that library are listed according to subject, as well as by author and title. *Education Index* lists educational books published during the time covered by one of its particular issues. If you want to select books considered significant in education, two lists may be of special help. The May issue of each year's *NEA Journal* includes a list of notable books in education which have been published during the previous year. Eleanor Witmer has compiled lists of significant books in education, which have been in the *Teachers College Record,* a periodical published by Teachers College, Columbia University. Also, she published a pamphlet on *Educational Books: Significant Publications.*[4]

You can find periodical articles by using some of the reference guides listed in this article; for example, *Education Index, Readers' Guide to Periodical Literature* and *Psychological Abstracts.* The periodicals, *The Elementary School Journal* and *School Review,* contain annotated bibliographies in each issue. These are planned so that in both periodicals there are particular topics handled in each issue in cyclical fashion.

Questions may arise as to how you can evaluate what you read. It is not uncommon for authors to consolidate their opinions and their information so that any separation of the two is almost impossible. Knowing which is which could have important consequences for the research plans that you make. There is no implication here that speculations of writers are not of value. They can stimulate one's thinking tremendously. However, there are different contributions which differ-

[4] Eleanor M. Witmer. *Educational Books: Significant Publications, 1937-1953.* New York: Teachers College Library, Columbia University, 1953.

ent kinds of materials can make to your understanding of your research problems. It is important to have the distinctions clearly in mind.

As you evaluate the materials you read, your own experience as an educational worker should not be underestimated. It is one of the most important sources for any evaluation of educational research materials. Your own thoughful consideration of the significance and relevance of research materials can, of course, be extended in group discussions.

You can obtain help for evaluating some materials through wide reading. This will give you familiarity with opposing points of view, if such there are, and the reasons for the opposition. You will learn of leaders in a field who represent different theoretical positions, and this information will help you in finding more of their writings if it seems important to pursue the matter. Book reviews may help you in obtaining others' evaluations of a particular approach to problems and of the way the author handled his subject. In *Education Index* you will find the subject heading, "Book Reviews," under which will be listed the author and the title of the book and the various periodicals which have included a review of his book. Another source of information is *Book Review Digest*,[5] which contains excerpts of reviews of the important books published in many fields of subject matter. It is almost impossible to find evaluations of periodical articles, so that wide reading may be the only source of your gaining information concerning others' points of view in regard to ideas presented in periodicals.

GUIDES TO REFERENCES IN SPECIAL AREAS

Indexes and Abstracts

In the planning stage of your research you may want to become acquainted with as many research reports as possible which deal with different aspects of your particular problem. Bibliographic indexes and abstracts are then essential for locating reports that have been published. Abstracts are particularly useful because the descriptions of research give information concerning the relevance of the study to one's needs. Following are some of the important guides to professional literature published in this country.

Bibliographic Index (edited by Bea Joseph). New York: The H. W. Wilson Company, 1938—.

This is a bibliography of bibliographies which covers many fields besides education. You may find this useful, but do not count on it.

[5] *Book Review Digest*. New York: H. W. Wilson Company, 1905—.

Child Development Abstracts and Bibliography. Bimonthly. Washington, D. C.: National Research Council, 1927—.

Education is only one of a number of other topical headings under which references along with their abstracts are listed. Some of these other topical headings are closely related to educational problems. Selection of reports concerning education seems limited to only a fraction of the studies published, and not all of the articles selected are concerned with research.

Education Abstracts. Fulton, Missouri: Education Abstracts. 1936-43.

If you are looking for educational publications of the particular period when this guide was published, this may be useful in providing references along with their abstracts. However, the intervening time has made it possible to have more complete descriptions and also evaluations of important works of this period. Whether you use this will depend upon the thoroughness your project requires.

Education Index. New York: The H. W. Wilson Company. 1929—.

This is the most important library tool for locating educational publications of all kinds. It lists educational books, yearbooks, articles in educational periodicals and also others closely related to education, bulletins and other publications of the U. S. Office of Education and of educational associations, book reviews and bibliographies. Faced with such an imposing array of references, the person searching for research materials can waste a lot of time in using this reference guide, if he is not fortified with his own fairly specific directives.

Psychological Abstracts. Lancaster, Pennsylvania: American Psychological Association. 1927—.

This is the major, comprehensive guide to professional literature in psychology. There is some overlapping in the periodicals covered by this guide and *Education Index.* There are advantages in using this reference guide along with guides devoted primarily to educational topics. There are references to research which would not be included in the guides to educational publications. Also the abstracts give one help in selecting references to be pursued.

Psychological Index. Princeton, New Jersey: Psychological Review Company. 1894-1935.

Whether or not this guide will be useful to you depends very much on the kinds of problems with which you are dealing. During the years when this guide was published concurrently with *Psychological Abstracts,* there was considerable overlapping between the two.

Readers' Guide to Periodical Literature. New York: The H. W. Wilson Company. 1900—.

This reference guide covers many fields of subject matter and many different types of periodicals. Only the most widely circulated of the educational periodicals are covered. Because of this limitation it will be useful primarily to those who have no access to more specialized indexes.

Dissertations and Theses

Unpublished dissertations and theses may or may not be of help to you, depending upon the quality of the studies which they report and upon the degree of specificity which you need to achieve in your own searching for materials. Dissertations will contribute overviews of the areas in which their particular subject is located and also bibliographies of related literature. The major disadvantage of using either dissertations or theses has been in obtaining them from the libraries in which they have been stored. However, the microfilm service referred to below has alleviated that problem somewhat. Following are some reference sources for both past and more contemporary works.

BROWN, STANLEY B.; LYDA, MARY L.; AND GOOD, CARTER V. *Research Studies in Education: A Subject Index, 1953.* Homewood, Illinois: Phi Delta Kappa, Inc., 1955.

Dissertation Abstracts: A Guide to Dissertations and Monographs Available in Microfilm. Ann Arbor, Michigan: University Microfilms, 1952—. (This was formerly Microfilm Abstracts, 1938-1951)

GRAY, RUTH. *Doctors' Theses in Education: A List of 797 Theses Deposited with the Office of Education and Available for Loan.* Washington, D. C.: U. S. Government Printing Office, 1935. (U. S. Office of Education Pamphlet No. 60.)

LAMKE, T. A., AND SILVEY, H. M. *Masters' Theses in Education.* Cedar Falls, Iowa: Research Publications. No. 1, 1951-52; No. 2, 1952-53; No. 3, 1953-54; No. 4, 1954-55.

LYDA, MARY LOUISE, AND BROWN, STANLEY B. *Research Studies in Education, A Subject Index of Doctoral Dissertations, Reports, and Field-Studies, 1941-51.* Boulder, Colorado: Published by the compilers with a grant from campus chapters of Phi Delta Kappa, 1953.

MONROE, WALTER S. *Ten Years of Educational Research, 1918-27.* Urbana, Illinois: University of Illinois, Bureau of Educational Research, 1928. (Bulletin No. 42.)

U. S. OFFICE OF EDUCATION. Library. *Bibliography of Research Studies in Education, 1926-27—1939-40.* Prepared in the Library Division, Office of Education. Washington, D. C.: U. S. Government Printing Office, 1929-42. Vol. 1-14.

AIDS TO LOCATING REFERENCE GUIDES

You can gain further help in locating research materials in several ways. One of the most important of these will be to consult your local librarians. In professional education libraries the librarians will be intimately acquainted with the materials in their library and will be glad to serve you. Librarians of other kinds of libraries will be acquainted with many reference materials; possibly they may know ways of obtaining research materials that are not immediately available locally. For example, some materials may be obtainable through interlibrary loans. In some states regional and state libraries offer services by mail.

It is possible that the bureau of educational research of your state university can provide help. In seeking such help it is important to state your request in specific terms so that those receiving it can handle it efficiently and helpfully. Research bureaus may have materials that are either inexpensive or free; also, they may provide some kinds of research services for school personnel.

The following publications will be especially useful to you not only in locating materials, but also in helping you to plan how to accomplish your tasks effectively and efficiently.

ALEXANDER, CARTER, AND BURKE, ARVID J. *How to Locate Educational Information and Data.* Third edition. New York: Bureau of Publications, Teachers College, Columbia University, 1950.

GOOD, CARTER V., AND SCATES, DOUGLAS E. "Survey of Related Literature and Library Technique." *Methods of Research.* New York: Appleton-Century-Crofts, Inc., 1954. p. 133-69.

SEEGER, RUTH. (Pamphlet concerning library suggestions for graduate students to be published in 1956 by the Bureau of Educational Research, Ohio State University, Columbus, Ohio.)

WINCHELL, CONSTANCE M. *Guide to Reference Books.* Seventh edition. Chicago: American Library Association, 1951.

WINCHELL, CONSTANCE M., and JOHNSON, OLIVE A. *Supplement to Guide to Reference Books, 1950-52.* Chicago: American Library Association, 1954.

Appendix B

The First Cooperative Curriculum Research Institute

Matthew B. Miles

Stephen M. Corey

THIS IS AN ACCOUNT of an experimental one-week training institute [1] held to strengthen the participants' competencies in conducting and helping others conduct cooperative research. Some of its features may be novel to ASCD readers, and the preliminary results from evaluation data seem promising enough that our experience should be described. A second national institute has now been held, and planning for a similar national institute and several regional institutes is under way. We believe our ideas on rationale, operation and evaluation may be of value to others.

Why the Institute Was Held

The existence of the current yearbook dramatizes the concern which ASCD has had for the encouragement and support of cooperative research as a method of improving the curriculum. Such a concern, however, voiced as it has been in ASCD meetings and publications, does not automatically insure that more cooperative research will take place. In fact, repeated exhortations to engage in cooperative research may only increase guilt, or even *reduce* the actual amount of research that is going on.

Beyond motivation to do cooperative curriculum research, people need *skills*—the know-how required to initiate, support and learn from inquiry-with-others. The fact that many instructional leaders have read about or heard about cooperative research, but have had little direct experience with it, means that necessary skills may be lacking.

[1] This account draws from an immediate summary report of the institute circulated to participants, also by Corey and Miles.

Cooperative research activities probably founder much more frequently because required competencies are lacking—whether these are the skills of relating to others or more traditional research abilities—than they do for other reasons (e.g., lack of funds, time, interest, human resources or administrative support).

When skills are lacking, training is a logical next step. Trial-and-error on the job is a costly way of learning. Intensive learning experiences away from the job where the instructional leader can express inadequacy, experiment with less fear of failure, get more nearly honest reactions from his peers, and grow in his ability to encourage and aid cooperative research efforts on the job—these experiences are perhaps the most promising way to get more cooperative research efforts built into curriculum programs. The need for this kind of training is great, but it is not widely available.

In 1953-54, staff members of the Horace Mann-Lincoln Institute of School Experimentation conducted an experimental series of two-day training conferences designed to help 16 New Jersey curriculum leaders with the skills they needed for cooperative research.[2] The apparent success of this undertaking encouraged planning for the more intensive training experience which is here described.

Planning

Initial Meeting

In late 1954, representatives of ASCD, the Horace Mann-Lincoln Institute (HMLI), the National Training Laboratories, and the Teachers College (Columbia University) Center for Improving Group Procedures met to make preliminary plans for a co-sponsored experience which came to be called CCRI, for Cooperative Curriculum Research Institute.[3] The CCRI was planned for one week and was to draw about 50 curriculum leaders from all parts of the country. It was to be an intensive attempt to help people gain the skills, insights and attitudes helpful in conducting, or helping others to conduct, cooperative research on the curriculum. The CCRI was seen as a possible experimental prototype. This encouraged more careful, costly

[2] Reported in A. Harry Passow, Matthew B. Miles, Stephen M. Corey and Dale C. Draper, *Training Curriculum Leaders for Cooperative Research*, New York: Bureau of Publications, Teachers College, Columbia University, 1955.

[3] ASCD cooperated with these three organizations in planning and staffing the institute. Major financing was by HMLI, which viewed the CCRI as an experiment, and supplied a staff member who was responsible for steering or operational research and over-all evaluation research.

planning and evaluation than would usually have been feasible. Only about one-fourth of the out-of-pocket costs was borne by the participants' registration fee of $25.00.

Purposes

Institute purposes were made explicit following this meeting in a brochure sent to the membership of ASCD:

1. To further the insights of curriculum leaders into the cooperative curriculum research process;
2. To further the ability to diagnose human relations problems in cooperative curriculum research;
3. To practice and evaluate some skills in cooperative research, leadership and planning;
4. To relate the learnings of the institute to specific curriculum development problems faced in the back home situation.

As these purposes indicate, the planners meant to focus on two major dimensions of learning at the CCRI: human relations, or cooperative work; and scientific problem solving, or research. Attitudes, concepts and skills were to be dealt with in relation to each dimension.

Staffing

Staff members were drawn from the sponsoring organizations, with an eye to their competence in human relations and research training.[4] A three-day planning session was held in late February to review application-blank data, map out the week, plan for research on the CCRI, and allot responsibilities. Another two-day planning session immediately preceded the institute.

During the institute, one staff member (Denemark) served as administrator, providing general coordination. Another member (Lippitt) was freed to coordinate the planning and presentation of general sessions and a third (Miles) took responsibility for research. The other six staff members had special responsibilities for leadership in the work groups. All staff members worked in general sessions, in afternoon special groups and during the back-home consultation period.

Rationale for Training

Although the institute grew out of continuing concern by ASCD members about the problems of cooperative research, and so had

[4] The members of the institute staff were: Stephen M. Corey, George W. Denemark, Robert S. Fleming, Arthur W. Foshay, Max R. Goodson, Julia Weber Gordon, Kenneth F. Herrold, Gordon L. Lippitt, Matthew B. Miles; and Nyla H. Ahrens and Orin McCarley, administrative assistants.

points of similarity to previous ASCD-sponsored meetings, it was planned on a basis somewhat different from the familiar workshop or conference. The over-all rationale for training drew heavily on experiences at the National Training Laboratory in Group Development at Bethel, Maine,[5] as well as on the series of HMLI training conferences already mentioned, and other workshop, institute and conference experience of the staff. There are several features of the over-all rationale which may be of interest to ASCD members.

A training laboratory. First, the institute was planned and approached as a "laboratory"—a situation where members could examine their own behavior thoughtfully and thoroughly in a setting withdrawn from the pressures of work (a "cultural island," as Lewin termed it). In contrast to studying or preparing written materials, working on "back-home" problems, seeing films or focusing on other vicarious or once-removed experiences, the members in such a laboratory study their own immediate here-and-now experiences using the experimental method.

The planners hoped that this approach could be taken to research skills where the training laboratory idea is newer, as well as to human relations skills, where it is basic to much of the work done in the past decade.

Intensiveness. A second major feature was the intensiveness and extensiveness of the week's work. The planners did not expect that any one kind of experience could even begin to supply members with what they had come to learn. They set up many different learning situations which complemented each other to produce a climate which they hoped would be unusually encouraging and supportive of change. The schedule was full. It usually kept members and staff at work from nine in the morning until nearly ten at night, except for meals and an afternoon hour-and-a-half break.

Staff preplanning. A third important feature was that the institute was largely preplanned, rather than cooperatively planned and revised during the meetings, as is the typical workshop. The staff attempted to set up a wide variety of learning experiences within which members could learn creatively. Some of these experiences allowed for a maximum of member planning. For example, the work group was designed to be a self-agenda-setting group which was to study its own process. Other experiences, like some of the afternoon interest groups, were set up almost like an academic teaching situation,

[5] See National Training Laboratories, *Explorations in Human Relations Training*, NEA, Washington, 1954, for an assessment of six years' experience at Bethel.

with little preinvolvement of members. Still other experiences, like some of the general sessions, were planned during the week itself with some help from members. The central feature, however, was that major blocks of time were set aside during staff preplanning for the different training experiences and that members were expected to throw their energies into using these blocks of time as creatively as they knew how, rather than into replanning or revising the over-all use of time.[6]

Training as the focus. A final major feature of the institute was that it was *training*-centered, rather than discussion-centered. The word "training" has for the writers some important implications:[7] (a) concern of a *focused* nature with problems of *skill*, competence, tools; (b) concern with *practice*, the opportunity for repeated performance of skills, with explicit, immediate knowledge of results made available to the learner; (c) concern with *safe experimentation*, the reduction of threat to build a permissive climate where the "chips are not down"; and (d) concern with *whole-person learning*—members must *understand, feel, act* in the learning experience rather than merely "talk about" what they are learning.

Although the staff, like any staff, did not have, of course, 100 per cent consensus on what it was trying to do, this broad conception of training, as contrasted with trick-dog or machine-operator training on the one hand and academic-intellectual learning on the other, lay behind much of the planning for the week.

Map of the Week

With this general rationale in mind, the staff produced a plan (Fig. 1) which included these kinds of activities:

Work groups. These groups met for one three-hour and five two-hour periods during the course of the week's training. Each group included 14 or 15 members and two trainers who had competencies and experience in both human relations training and cooperative research. Members were assigned to these work groups by a plan which made for maximum heterogeneity. The purpose of the work groups was

[6] Misperceptions of this intent occurred during the opening general session, when some staff and most participants felt members were being asked to revise the over-all plan. This misperception was gradually clarified as the week proceeded, not without some frustration, since members' past experiences had probably been primarily with cooperatively-planned meetings.

[7] See Matthew B. Miles and A. Harry Passow, "Training in the Skills Needed for In-Service Education Programs," Chapter XIV, *In-Service Education*, 1957 Yearbook, National Society for the Study of Education, Chicago: University of Chicago Press, 1957, for further discussion of these ideas.

FIGURE 1

LEADERSHIP TRAINING INSTITUTE IN COOPERATIVE CURRICULUM RESEARCH

April 24–30, 1955

East Lansing, Michigan

	9:00	10:00—11:00	12:00	1:30—2:30	3:30—4:30		6:00	7:30—9:30
SUN					REGISTRATION			General Session—"Orientation"
MON	General Session—"Help & Hindrances to Groups at Work"	WORK GROUP	L	WORK GROUP	General Session—1. Group Reports 2. Choosing P. M. Special Groups	F	D	"Bull Session"
TUES	General Session—"Characteristics of Groups at Work"	WORK GROUP	U	SPECIAL GROUPS	OPEN	R	I	OPEN
WED	General Session—"Hidden Agenda"	WORK GROUP	N	SPECIAL GROUPS	"Bull Session"	E	N	General Session—"Institute Self-Study, Data Analysis & Interpretation
THUR	General Session—"Design of Cooperative Curriculum Research"	WORK GROUP	C	SPECIAL GROUPS	CONSULTATION RE BACK-HOME SITUATION	E	N E R	General Session—"Cooperative Curriculum Research as Social Change"
FRI	WORK GROUP		H	SPECIAL GROUPS				OPEN
SAT	STAFF MEETING							General Session—"Summary and Closure"

to provide training in the human relations and research sensitivities and skills needed for cooperative research. The agenda and activities were established by the group members themselves, who studied their own group experiences in a laboratory-type approach.

Special groups. These special groups were planned in advance by the staff to give direct instruction for either two or four hours on the following topics:

*Sociometrics
Getting and Analyzing Data about Children
Quantifying and Analyzing Unstructured Data
Introducing Innovations, Getting Experimentation Under Way, Risk-taking
Design for Action Research
Questionnaire and Inventory Construction
Role of the Consultant
*The Interview as a Source of Evidence
Getting Involvement and Shared Leadership
*Controlled Behavior Observation
Efficient Treatment of Numerical Data
Diagnosing a Troublesome School Situation
Problems of Working Within School Organizational Structure
Role Playing for Diagnosis, Training, as a Source of Data
*School Records
Projective Tests as Sources of Evidence
*Case Study Methodology
The Use of Published Tests in Action Research
*Ethical Considerations in Cooperative Curriculum Research.

The topics preceded by an asterisk did not materialize during the Monday afternoon period when delegates made their choices regarding the kinds of instruction they needed. It had been decided that groups would not be conducted on topics unless three or more participants chose them.

General sessions. There were nine general sessions. These included all institute participants, and used many different kinds of large meeting procedures to elicit audience participation. These general sessions were designed to aid conceptualization, to increase sensitivity and in some instances to provide skill training.

The content of these general sessions was as follows:

1. Orientation
2. Helps and Hindrances to Group Work
3. Group Reports and Choosing Special Groups
4. Characteristics of Groups at Work

5. Institute Self-Study, Data Analysis and Interpretation
6. Hidden Agenda
7. Cooperative Curriculum Research as Social Change
8. Design of Cooperative Curriculum Research
9. Summary and Closure.

Back-home consultation. One hour on both Thursday and Friday afternoons was set aside for individual consultation with staff members regarding application of training to back-home problems. These consultation periods were set up in twenty-minute units. Many of these periods involved teams of members.

"Bull sessions." Members met briefly on Monday evening and Tuesday afternoon in small randomly composed groups to share and compare their reactions to the experiences they were having, blow off steam, and integrate the learnings of the institute for themselves. Staff members did not attend these sessions.

Discussant panel. Two members from each work group were elected to meet each day with the staff members responsible respectively for administration of the institute and research. Over a meal, they shared reactions and made suggestions which were fed into staff planning sessions. This gave the staff an opportunity to keep a finger on the pulse of the institute.

Staff meetings. Meetings of all staff members were held usually once a day to check progress, get final briefings from staff teams on forthcoming general sessions and make other necessary decisions.

Film showings. Two films dealing with human relations problems (*Our Invisible Committees* and *Role Playing in Human Relations*) were shown Wednesday and Thursday evenings after supper. Attendance was optional.

Facilities

Considerable attention was paid by the staff to establishing physical and personnel facilities that were of optimum utility. Holding the institute at the Kellogg Conference Center permitted the use of a modern dormitory in which all participants and staff lived, and a modern student union building a block away in which meals were served. Large and small meeting rooms were in the union building and dormitory. They were equipped with flexible furniture and with blackboards. The institute's office was staffed by two secretaries; large amounts of material were duplicated. Tape recorders, dictating machines, movie projectors, and newsprint were used a great deal. The

institute administrator coordinated these resources and services to help provide an optimum training environment.

Recruiting

Notice of the CCRI was published in the ASCD *News Exchange* early in January 1955. The over-all cost, minus transportation, was announced as $25.00 for registration fee, and $50.00 for board and room. The registration was limited to 50 people with leadership responsibility for curriculum improvement as public school practitioners or teachers in graduate education programs.

Members of ASCD interested in the prospectus for the institute were asked to send for an application blank (developed from a similar form used by the National Training Laboratories). One hundred and twenty-five people did so within a three-week period. Fifty-nine individuals filled out the form. The members of the staff, after considerable debate, decided to invite all those who met the "status leadership" criterion to attend the institute. Forty-three attended.

Application blank data. Following is a brief breakdown of preliminary data on the 43 members, as gathered through the application blanks.

1. *Geographical spread.* About one-third came from the Northeast, one-third from the Midwest, and the remainder were widely distributed over the U. S.

2. *Jobs.* The occupational roles of participants were comparable to those in the total ASCD membership, with some exceptions. The institute drew no classroom teachers without status leadership responsibility, no subject supervisors, no full-time students and no one from the community at large. However, relatively more curriculum directors and coordinators, and more state departments of education personnel came than is true of the total ASCD membership. Over half of those at the institute were public school personnel.

3. *Experiences related to cooperative curriculum research.* Participants brought a wide variety of previous experience to bear on the week's work. These included: leading or working in cooperative research groups; supervision of research; graduate study; workshop experiences; publication; work on state or regional committees.

4. *Mode of attendance.* About three-quarters of the participants came as official representatives of their organizations, with expenses paid. The remainder either paid their own way partly or wholly.

5. *Needs and expectancies.* When asked prior to the institute to look at specific skills of cooperative research on a check list and rate

these according to degree of interest and desire to learn, members rated most highly items dealing with training or helping others, such as "Involving Others in the Research Approach to Curriculum Change," "Stimulating Shared Leadership" and the like. Items rated lowest were those dealing with the technical aspects of research, such as "Analyzing and Interpreting Data," and "Establishing Experimental Controls." Another low item was "Dealing with Problems of Status and Hierarchy."

Responses to the question, "In what specific ways do you hope that the institute can help you?" varied widely, but fell in six major categories: techniques of research; techniques of involving others; skills of improving group process and human relations; help with particular back-home problems; help with own morale-building; and learning and sharing with others at the institute.

These data were helpful to the staff in planning and gave a picture of an active, motivated participant group ready for a week of intensive work on cooperative research problems.

Research on the Institute

Since the CCRI was experimental in nature, the staff wanted to get data before, during and after it for two purposes: (a) to improve the immediate quality of planning and execution of the training experience; (b) to assess the longer-term effects of the week's work on the behavior of the participants as a basis for improving the quality of future similar institutes.

Preliminary data. Prior to the East Lansing meeting, much data had been gathered.

1. *Application blank.*

2. *Sentence completions.* To get data on participants' conceptual understanding of cooperative curriculum research, as well as on their expectancies for the week, a set of incomplete sentences was developed. These included items like, "I would guess that cooperative research on the curriculum usually breaks down because . . .," "Cooperative curriculum research to me means . . ." and "I would guess that most of the people coming to the institute are approaching it with definite feelings of . . ." Some of these data were summarized and formed part of the opening general session.

3. *Inventory.* To get evidence on participants' attitudes, beliefs, ways of behaving, skills and techniques relevant to cooperative curriculum research, a long inventory was adapted from previous HMLI

work.[8] The inventory was also designed to measure the degree to which participants felt they influenced co-workers on the job.

4. *Case analysis.* Finally, participants were asked to analyze a case problem dealing with a conflict over closing time in the primary grades of the school system of "River City." This was designed to measure participants' ability to diagnose a complicated school situation sensitively and to plan effective action based on sound principles.

5. *Data from co-workers.* Each participant was asked to locate a co-worker with roughly similar job and interests who would also respond to the sentence completions, inventory and case analysis. By doing this, we hoped to get a "control group" against which participants' changes as a result of the week's intensive work could be measured.

Data gathered during the institute. Other data were obtained during the training week.

1. *Analysis of role playing.* Members wrote an analysis of a role-playing demonstration on Monday, then repeated this analysis on Friday while listening to a tape recording of the demonstration. These data bear on the question of how much members' sensitivity and diagnostic ability changed during the week itself.

2. *Post-meeting reaction sheets.* Members filled out sheets after every session. The forms varied at different meetings, but asked questions about general satisfaction, reasons for satisfaction, strengths and weaknesses of the session, learnings, suggested improvements and the like. These were designed to get at immediate perceptions of each session. Summaries of these data were fed back and used to improve some general sessions, work groups and special groups.

3. *Anecdotal records.* Staff members kept anecdotal records of all sessions, as a way of recording the sequence of activities and their implications for learning. Brief anecdotal comments were also made on the growth and change of individuals in the work groups.

4. *General evaluation sessions.* Tape recordings or detailed notes were made during a number of evaluation sessions. These included the final general session, the final staff evaluation session and the meetings of the discussant panel.

Data gathered after the institute.

1. *Open-end responses.* Members were invited to send, after they had returned home, letters discussing their reactions to the week.

2. *Readministration of pretest instruments.* Members and their co-

[8] See A. Harry Passow *et al., op. cit.*, p. 140-46.

workers reacted again to the sentence completions, case analysis and inventory first given in November of 1955.

3. *Post-institute reaction sheets.* Members completed a two-page form analyzing selected factors in their own situation which were helping or hindering them in their work. Space was also provided to list cooperative curriculum research activities which had been initiated or improved as a result of the institute, to discuss learnings, and to make suggestions for a future institute.

All the evidence gathered is being analyzed with a view to discovering the amounts and types of change that took place in members, and to locating factors which seemed to account for differential amounts of change. As results become available, they will be reported to groups planning other institutes. A preliminary statement of findings is included later in this report.

The Training Experiences

Below, we provide descriptions of the various types of training experiences which occurred during the week: general sessions, work groups and special groups. With each there is a brief explanation of purposes, approach and procedures, followed by several case examples.

GENERAL SESSIONS

There were nine large group meetings attended by all members of the institute group—staff and participants. These sessions were designed to facilitate conceptualizations, sensitivity and occasionally skill acquisition. Generally they were planned by the staff but involved, in most instances, participation by nonstaff members, particularly in the role-playing situations. A conscious attempt was made to utilize a variety of large meeting techniques. Usually some comments helped to make the meeting procedure or methodology visible, so that members of the group might learn not only about the meeting's content, but also about large-meeting processes.

Records were made of all general sessions. Most of the recording was manual, although large segments of some meetings were tape recorded. The following summaries of two of these meetings are based upon handwritten notes.

Post-meeting reaction questionnaires (PMR's) were distributed immediately after each general session. The first item asked members to evaluate the session on a five-point scale ranging from very dissatisfied to very satisfied. The respondent was then asked (a) to indicate

both the particular strengths and weaknesses of the session as he saw them, and (b) the things that seemed most important and useful to him personally. A final item invited any other comments that the member wished to make.

GENERAL SESSION NO. 4: CHARACTERISTICS OF GROUPS AT WORK
(Tuesday morning)

1. *Purpose.* This general session had a twofold purpose: first, to help conceptualize some of the salient characteristics of a group of people working on a task; second, to give participants some practice in analyzing these characteristics as they revealed themselves in a group at work.

2. *General Design.* The meeting began with a 20-minute lecture, followed by a role-playing demonstration, with subgroups designated to observe special aspects. Finally, the subgroups reported their observations.

3. *Content.* In his lecture, Gordon Lippitt listed on the board these elements that are involved whenever a group of people meet to get a job done: (a) Group Background—people come to a meeting with a variety of already established feelings. (b) Participation Patterns—certain people dominate the discussion, others say very little. (c) Communication—information is transmitted between group members verbally or nonverbally. (d) Group Cohesion—how highly do the members of the group value membership in it? This conception of cohesion is not to be confused with emotional "stickiness." (e) Subgroups—people identify with and support one another. This support is based sometimes on friendship, and sometimes on issues. (f) Group Atmosphere—the psychological climate. Is the situation warm and permissive, or cold and rigid? (g) Group Standards—groups that meet several times develop certain norms which influence the members' behavior. (h) Group Procedures—how does the group go about getting its job done, identifying the problem, proposing solutions, and the like? (i) Member Behavior—the different classifications of member behavior are sometimes represented as task centered, group centered or self-centered. (j) Designated Leader Behavior—this person's behavior makes an important contribution to group productivity. Does he behave so as to encourage participation? Does he look for facts before decisions are reached?

Next, Matthew Miles set the scene for a role-playing situation. Some members of an elementary school staff were meeting with their principal and a person from the central office. Except in the primary grades, the school had been reporting pupil progress through letter

grades. Some teachers had been using parent conferences, and this principal had asked these members of his staff to get together and explore what might be done to involve the total faculty in working on this "reporting to parents" problem. The committee had met three times previously.

The various role players were interviewed prior to the role playing. This gave them a chance to "warm up" and to communicate to the other role players, as well as to the audience, the kind of people they were to represent.

The "principal" started the role playing by opening the meeting and requesting help from this group in bringing the entire staff to consider the problem of changing the reporting system. This resulted in 15 minutes of animated exchange.

Prior to the role playing, various groups among the audience had been asked to look particularly at the following variables:

Group 1: Communication and Participation
Group 2: Group Atmosphere
Group 3: Cohesion
Group 4: Goals and Procedures
Group 5: Member Behavior
Group 6: Leadership Behavior.

After the role playing these groups held buzz sessions for about 10 minutes, and then reported their observations. (e.g., "the principal did not try to resolve disagreements, but increased defensiveness," "a lack of warmth hindered cooperative problem solving," "the covert goal was that of avoiding responsibility.")

4. *Evaluation.* The satisfaction index for this session was 4.3 on a scale of 5 (ranks second among eight general sessions). The people who thought the session was very or quite satisfactory said that it effectively combined lecture and demonstration to make ideas clear; showed evidence of careful planning, good design, good techniques for observing and reporting, good physical arrangements; and resulted in good involvement and participation. The chief weaknesses mentioned were that the time was too short, and that if the session had come earlier in the week, it would have assisted group participation.

GENERAL SESSION NO. 5: INSTITUTE SELF-STUDY—DATA ANALYSIS AND INTERPRETATION

1. *Purpose.* The meeting was planned (a) to provide practice in analyzing data to find out what action inferences might be made from these, (b) to indicate the range of data being gathered on the insti-

tute, both as a learning experience for members and to increase involvement in the research itself.

2. *Design.* The total population was divided into six working groups, with a staff member in each group. These groups worked for 80 minutes analyzing different kinds of data about the institute population. Reporters then explained to the total group what had gone on in the subgroups. Finally, a staff panel reacted to these reports.

3. *Content.* Seats had been arranged for everyone around six tables. Each of the six groups was instructed to choose a recorder, and it was understood that when he reported he would direct attention to these three points: First, how did the group proceed to analyze the data? Second, what did the group learn about data analysis? Third, what did the group learn about the institute population? The reports of four groups are briefly summarized as follows:

Group 2 analyzed "Sentence Completions" which were responded to by all participants prior to the institute.

a. *Data analysis process.* First, attempted to define the problem; second, established limits; third, trial run using a sampling technique; fourth, redefinition and delimitation of the problem; fifth, tabulated; sixth, arranged according to frequency; finally, regrouped.

b. *What was learned about data analysis?* (1) After data are collected, one must learn what use is to be made of them. (2) Objectivity or consistency are increased by repeated checks on the data. (3) Unstructured data have a wide range. (4) In making analyses, one is not necessarily limited to items included in the questionnaire.

c. *What was learned about the institute?* (1) The variation in expectations. (2) The majority of those coming to the institute were interested in techniques.

Group 3 analyzed the "Case Study and Proposed Actions" which all participants completed before coming to the institute.

a. *Data analysis process.* First, scanned replies to determine high points; second, discussed various means of analyzing the data; third, attempted to categorize the first steps in order to determine whether these expressed values; fourth, tabulated the first reason to determine whether there was consistency between action and reason.

b. *What was learned about data analysis?* (1) It is difficult and time-consuming, but rewarding. (2) Much information may be obtained from this type of data-securing device (reaction to case study). (3) Teachers should be encouraged to use devices which are focused and do not swamp them with data.

c. *What was learned about the institute?* (1) Delegates varied greatly in the procedures they would use to cope with a "case" problem. Some of

the first steps reported were: meeting with teachers, meeting with administrators, meeting with administrators and teachers, and meeting with superintendents. (2) Opportunities to practice and analyze decision making should be provided in the institute. (3) Opportunities to express reasons for decisions and examine inconsistencies should also be provided.

Group 5 analyzed "Work Group Post-Meeting Reaction Forms."

a. *Data analysis process.* First, divided the evaluation sheets; second, found means of satisfaction ratings; third, compared means within groups and also between one group and another; fourth, classified comments on one question in terms of positive, negative and neutral; fifth, compared ratings.

b. *What was learned about data analysis?* (1) First run-through of data may not bring out much of significance. (2) People probably find it easier to comment critically than give a low rating.

c. *What was learned about the institute?* (1) People are motivated or interested sufficiently to make extensive comments on PMR's. (2) There is a general positive feeling about the institute. (3) The trend is toward more positive feeling. (4) More time is needed for most activities.

Group 6 analyzed "Inventory, Cooperative Research, Section on Skills (Adequacy)"

a. *Data analysis procedure.* First, scanned data; second, explored and discussed possible ways of analyzing; third, decided on testing one hypothesis; fourth, agreed on the procedure for tabulating the data (and data on special-group preferences) to test the hypothesis.

b. *What was learned about data analysis?* Formulating a hypothesis helps in the analysis of data.

c. *What was learned about the institute?* (1) Institute participants rated themselves higher in the human relations than in the research skills. (2) Choice of research activities (in special groups) has been less frequent than in activities in which participants rated themselves adequate. (3) Participants should re-examine their inadequacies and avail themselves of the opportunities to increase needed skills.

A reacting panel of members of the staff stated these generalizations about data analysis after hearing all of the groups report:

1. Many of the participants in the institute were status leaders, but in this data-tabulating situation they were learners, too. There was a great deal of genuine concern with techniques and skills involved in the analysis of data.

2. In their analysis and treatment of the data, people operated on these two quite different levels of analysis: (a) tabulating data to get some surface meanings, and (b) attempting to interpret the significance of data by reaching back into motivation and feeling.

3. In regard to the treatment of data, people are apt to say that

they are competent in a certain skill if they think others expect them to have that competency.

The reports and observations of the reacting panel took about 45 minutes.

4. *Evaluation.* The summary index of satisfaction for this session was 4.2, which ranked third in the eight sessions. The people who rated the session as good or excellent commented variously. Some of them called attention to the fact that the group was gathering momentum, things were fitting together better, the variety of experiences was great and a lot was being learned. Those who commented unfavorably were few in number and they tended to call attention to the fact that the schedule was too heavy, and that individuals become quite tired and need time for relaxation.

WORK GROUPS

There were three basic work groups, each with 14 or 15 members. Each group met for a total of 12 hours. These groups were planned to provide training in tackling the human relations problems of cooperative research, via a laboratory approach. Specific training content was determined by the group.

Each of the three groups, as might be expected, operated differently. Generally the two staff members who worked with the group rotated responsibility as trainer and associate trainer. They kept records of what went on, and these records varied from group to group in form and emphasis. Following is the trainer anecdotal record for Group 2, a representative group. The staff members involved were Arthur W. Foshay and Stephen M. Corey.

Session 1. Monday morning. The session started with Foshay's suggesting that everyone give his name, tell where he worked and say something about what he hoped to get out of the 13 or 14 hours during which the group would be working. He suggested that this might be followed by a small group discussion during which we would try to recall what had been said and build an agenda for the week.

The introductions started about 10:30 and the first three people gave only their names. Corey interrupted, commenting that this information was already known, and that to be helpful each person would probably have to say something more. This led to further consideration of the purpose of making introductions. The introductions then went on until 11:00.

A group member then commented that everyone seemed to be under terrific time pressure and suggested that the group just sit back

and talk. This caught on and many feelings were expressed both supporting and opposing role playing, "group dynamics," and similar concepts and practices.

At 11:20, Foshay summarized and suggested a transition, but the general discussion about group dynamics went on until about 11:50. Foshay then reminded the group of a previous suggestion that there be some buzzing in small groups. Although the groups were formed, the pressures to keep everybody in one group were so strong that the small groups did not get going. Small groups were scheduled for the first thing in the afternoon. PMR's (post-meeting reaction sheets) were then distributed, and the group adjourned about 12 noon.

This session was frustrating to a number of the group members. The index of satisfaction was 3.5, which was the lowest of the three groups for the first meeting. Some confusion was acknowledged and a bit of resentment at too much staff structuring.

Session 2. Monday afternoon. There was some initial resistance to forming small groups for agenda building, but after about 20 minutes small groups formed and met from 2:00 until 2:30. The particular "problems" reported were put on the board and discussed. By 3:05 the group agreed upon a "case" approach and four people were asked to develop a case, which was to be dittoed. The group spent five or ten minutes suggesting the kinds of conditions that should be built into the case.

PMR's were distributed about 3:15. At 3:30, Foshay began a feedback of the morning PMR's. There was a fair amount of discussion, with some rationalization of the rather low rating of the meeting.

Members of the group felt better about this second session. The mean PMR rating was 4.2. Many expressed pleasure at having agreed upon an approach. To some, tension was reduced and most compared the afternoon session favorably with the morning session about which there was some indication of guilt feelings.

Session 3. Tuesday. Foshay, as chairman, proposed this sequence of events: (a) a discussion of Monday's PMR's, (b) consideration of the case, (c) decision as to what to do after the case situation was clarified and understood.

The proposal was accepted and there was about a ten minute discussion of PMR's in general. A member of the subgroup which had prepared the case then read it to the group. The case involved a supervisor's starting to work with an elementary school staff. This specific problem finally was identified as a focus for training and discussion: "What is Miss Isgood, the new elementary education director, to do

in the particular elementary school described in the case in order to get on with her work?"

Corey proposed that it might be interesting to role play some situations against the case background and then analyze these. A member suggested three situations for role playing: (a) The elementary school staff in a session called by the principal hears an announcement that the new supervisor will meet with the staff next week. The principal asks staff members whether they would care to talk a bit about how they would like to work with the supervisor. (b) The supervisor meets with the staff. (c) The staff discusses the supervisor after she has left.

The agreement was that the group would analyze the tape recordings of these role-playing situations, particularly situation "c," in order to study the behavior of the coordinator and the staff. The remainder of the morning was spent in role playing and recording the staff meeting prior to the visit with the new coordinator. The meeting concluded with filling out PMR's and a group's volunteering to work with these forms over the lunch hour.

This session was quite satisfying (PMR 4.3). Comments were made about commendable orderliness, task focus, and reduction of dominance by leaders. Several members indicated an improved opinion of role playing, although some skepticism was still evident.

Session 4. Wednesday. The meeting started with a five minute feedback of PMR's from the previous day's meeting. Following this the second role playing (scene "b") was put on the tape. This was quite evidently enjoyed and was followed by considerable laughter and chatter.

At Corey's suggestion, the final role playing (scene "c"), which took place in the teachers room, was taped immediately.

Beginning at 11:15 there was a discussion of how to use the tapes. It was agreed that they would be played back until someone wanted to comment. The first scene played back was the staff session with the supervisor (scene "b"). There were frequent interruptions and analysis, with talk quite easy and general. These points were made: (a) the principal tended to patronize both the supervisor and the staff; (b) the supervisor perceived the principal as someone who was going to run the meeting; (c) the principal seemed to have an unexpressed fear that the supervisor might compete with him for leadership. There was considerable discussion of the desirability of operating in a situation through power figures.

All discussion terminated at about 11:55, and the group then spent almost 30 minutes summarizing. There was some discussion of the desirability of an extra group meeting. A good deal of feeling was

expressed that there was too little time to do what the group wanted to do.

Session 4 was the most satisfying to date for Group 2 (index 4.6). Group interest was high, group cohesion was commented upon favorably and participation was general. Many members commented that the tape analysis had led to new insights into meaningful human relations. Some changes in perception of role playing as a training method were reported.

Session 5. Thursday. Again the meeting started off with a discussion of Wednesday's PMR's. Foshay commented that the statements focused less on the group's own process and more on the content it had been discussing. After a number of proposals, at about 11:00, the group decided to listen to the recording of the first of the role-playing situations when the supervisor was not in attendance, but when the principal was discussing how to work with her staff.

At about 11:30 the tape was interrupted and the group engaged in some spontaneous role playing dealing with threatening questions that might be asked a consultant. After about 20 minutes a member called the group's attention to the participation pattern, which was focused in a few people. This pattern was discussed until about noon, when it was agreed that the Friday morning session should continue in much the same fashion as this one.

This session was somewhat less satisfying than session 4 (index 4.2). The emphasis upon sincerity and honesty in human relations was generally appreciated. The trainees reported some guilty feelings about the frequency with which they commented. Several commented upon the desirability of more widespread participation. A check in the dining room following this meeting indicated that, with very few exceptions, each table was occupied by people who were in this same basic work group. This suggested the rather strong drawing power of the group and the extension of the forces within it to the luncheon period.

Session 6. Friday. Again the meeting started with a report on the previous day's PMR's. The trainers were asked about the reports they were dictating after these group meetings, and the reports were described. At 9:22, Corey suggested that the tape be played, picking up where it had left off yesterday. This resulted in a consideration of the role played by in-group or out-group members of the staff, the struggle for status in a "change" situation, the role of power figures and how to identify them. This concluded our listening to the tapes. At 10:00 the group interviewed some of the role players.

At about 10:15 it was proposed that the group should discuss ways the supervisor should act in this kind of situation. This resulted in rather disorganized discussion until the coffee break.

Following the break, there were buzz sessions to decide what to do with the remainder of the period. When these groups reported, one suggested an exchange of personal opinions concerning what the week had meant. This was later defined as a report by each person on what the meetings had meant to him professionally. The comments were generally favorable. Each speaker talked about 20 or 30 seconds. Some of the major learnings were these: "I've gotten over some of my fear of group dynamics as a cult." "I renewed my faith in people." "Patience, pacing and timing are exceedingly important aspects of cooperative curriculum research." "Assessing the concerns of co-workers adequately is essential for cooperative work." "The hidden agenda is something to which I will be more sensitive." "I have learned the necessity for distinguishing more clearly between the consultant, the trainer and the discussion leader." ". . . the importance of honesty in professional talk." ". . . the importance of listening to other people carefully when they talk." ". . . the difference between the gadgets and tricks and the philosophy behind them." ". . . the sequence of events in action research." ". . . the difference between role playing as a springboard for talk and as a device for training." ". . . the importance of focusing training on highly concrete situations." ". . . the conception of relativity in the idea of action research, which makes it easier to start."

This final session was judged by the members of Group 2 to have been the best of all with an index of 4.7. Many comments were made about carry-over to the job. The skill of the leaders was referred to by some members.

SPECIAL GROUPS

Twelve different special groups met for either two hours or for double two-hour periods on Tuesday, Wednesday, Thursday and Friday afternoons. These special groups ranged in size from three to 16 members. One or two staff members worked with each group.

Originally, seven groups dealing with human relations and 12 groups dealing with research were offered. Six of the seven groups which did not materialize because of insufficient member interest were focused on research. This, paradoxically, was the dimension in which members felt (on the inventory) that they stood in greatest need of training.

Group size and duration varied, but the six human relations groups had 190 man-hours of attendance, and the seven research groups had 148 man-hours of attendance.

With few exceptions, these special groups were judged to be exceedingly satisfactory by the people who participated. There was a slight tendency to react more favorably to the smaller groups than to the larger groups. The median PMR average, however, was 4.4. Three groups were judged unanimously to have been "very satisfactory" (5.0, highest rating possible). The lowest average PMR was 4.1.

Below are accounts of six representative groups, including the topic, the length of meeting time, the leadership, group size, and a brief summary of what went on. In most cases the staff members responsible for the special interest group had brought extensive materials with them. These materials are not reproduced in this report, but their nature is described.

Getting and analyzing data about children. This group of five met for four hours, two on Tuesday and two on Wednesday. The leader was Julia Weber Gordon.

The purpose of this double period meeting was to present and react to as much information as possible that would be of help in connection with various sources of data about children. Consideration was given to unstructured records, sociometrics, projective tests and behavior records. The group started by planning together, and most of the time was spent dealing with specific questions raised by members.

Toward the end of the double period, attention was given to ways and means of involving people in child study, evaluating the teacher's understanding of the child, interest inventories, and the implications of the CCRI for child study. A bibliography which had been used by the leader in connection with child study groups was subsequently sent to the members of this group.

Diagnosing a troublesome school situation. This group of 15 met for two hours on both Thursday and Friday. The leaders were Kenneth F. Herrold and Julia Weber Gordon.

The chief purpose of these two work sessions was to establish some conceptual system for understanding the problems faced in assessing and diagnosing troublesome school situations. Content presented had to do with field theory, force-field analysis, power constructs and their relation to authoritarianism, social distance and communication, and interaction theory.

The general method was one of staff lecture with many interruptions for questions.

This was followed on the second day by a role-playing situation to test the group's ability to diagnose the forces at work in a particular situation in order to determine the trouble. This was followed by informal discussion of the role playing and questions and comments.

Problems of working within the school as a formal organization. This group of 18 met for two hours on Thursday and on Friday, and was led by Max Goodson and Matthew Miles.

Purpose of the first day was primarily to develop concepts which would be helpful in working within a school system, seen as a formal organization. The general design involved these steps: (a) a brief orientation; (b) a lecture analyzing some of the dynamics and concepts that help in understanding organizational structure; (c) a question sheet, on which all members checked the particular questions regarding an organization's work structure that had relevance for them; (d) paired interviews, in which each member of a pair interviewed the other for 20 minutes, asking him about the questions he had checked and listening to his comments on them, then was interviewed in turn; (e) reports from the interviews, in which interviewees reported on the interview situations; and (f) organization of these concerns and planning for the work on Friday. Materials from *Adult Leadership* magazine on formal organization were distributed.

The second session was designed to consider further the formal relationships in the school in light of the problems and concerns that had been raised the previous day. These concerns focused on overlapping roles, authority difficulties, communication, and the problem of making changes in the formal organization of the school. A substantial part of the session was devoted to a role-playing situation which was analyzed in regard to conflicts resulting largely from formal organizational difficulties.

Role playing. This group of five met for two hours on both Thursday and Friday. The leader was Gordon Lippitt.

The chief purpose of these sessions was to share knowledge about role playing and to develop more confidence by the members in its use in educational situations. The first day was devoted to the study of leader-prepared materials, which defined psychodrama, sociodrama, role playing, role and spontaneity; suggested some uses of role playing; and described at considerable length the steps involved in the use of role playing. This was followed by an assessment of the areas of interest in the group. Some time was spent watching a training film on role playing, and finally the group planned and carried out a role-playing situation in the final general session.

A bibliography of 24 items entitled, *Selected Bibliography on Role Playing*, was distributed to members of the group.

Projective tests as sources of data. This group of six met on Thursday for two hours and was led by Arthur W. Foshay.

This session was devoted primarily to a consideration of a particular kind of projective material, namely the open-ended question or the unfinished story. This material was illustrated, and some practice was given in the interpretation of data resulting from it.

The general method involved a short lecture, in which projective materials were defined, and the group was presented with the responses of 23 seventh grade children to three questions used in an unfinished story. The remainder of the period was primarily discussion. The major lesson emphasized was that the projective material should be interpreted within rather strict limits.

The use of published tests. This group of eight people met for a two-hour period on Friday and was led by Robert Fleming.

The purposes were: to develop some understanding and some potential uses of published tests in cooperative curriculum research; to review several selected tests for the purpose of identifying their uses in this kind of research; and to analyze some test data for practice.

There was discussion of the following uses of published tests in cooperative curriculum research: diagnosing the needs of groups and individuals; establishing bench marks; measuring pupil progress in specified areas; helping young people to self-evaluate; studying a particular segment of a school program; making a comprehensive survey of a school; helping some teachers as individuals to become more sensitive to pupil characteristics and needs.

Attention was called to some of the new and different types of tests, such as the S.R.A. Youth Inventory, the Mooney Problem Check-List, the Sims Social Class Inventory Scale, the Allport-Vernon Study of Values, the Spitzer Study Skills, the Gordon Personal Profile, and the like. Many kinds of tests were displayed, including achievement, work habits, study skills, personality, mental ability, and the like. Charts were displayed as well, describing the findings of several tests in two schools.

Immediately Gathered Evaluation Data

In this section we present briefly some preliminary findings on the institute and its effects. These findings appear in data collected while the institute was in progress.

Discussant Panel

The concerns which appeared during the meetings of the discussant panel are reported herewith. They give some of the flavor of the week's work as it proceeded.

Monday: Time pressures are very heavy; a lot of material coming out; many activities; not always clear what's going to happen next; little chance to share with others.

Reasons for use of PMR's need explanation (why have names? how are PMR's used? why not have an over-all, end-of-day reaction?).

(Following staff query) No general feeling that "human relations" emphasis of early sessions needs more explicit relation to the "research" dimension.

Staff should not imply that modifications of the institute are possible (as in opening general session), then fail to follow through on suggestions made.

Some feeling that work group leaders were deliberately experimenting with different types of leadership.

Tuesday: Wide variety of reactions and feelings expressed about work groups.

Still some negative feeling about extensive use of PMR's, but in general they are much more accepted as part of the "culture."

(Following staff query) Films should be shown on an optional basis.

Time pressure is less.

Perhaps other devices than role playing might be used in general sessions.

(Staff reactions to previous discussant panel comments were reported to the group.)

Wednesday: No strong need for a party Thursday night.

People do not seem especially worried yet about making back-home applications of learning.

Most of the initial worry and anxiety seem to be over and people are settling down to hard work.

Special groups are very helpful.

Thursday: (This was a free evening, and only two discussants appeared, suggesting that the need for the panel in the institute had diminished appreciably.)

Topics discussed focused mostly around back-home application, and problems of effective summary and closure of the week.

Friday: Final evening: no meeting scheduled.

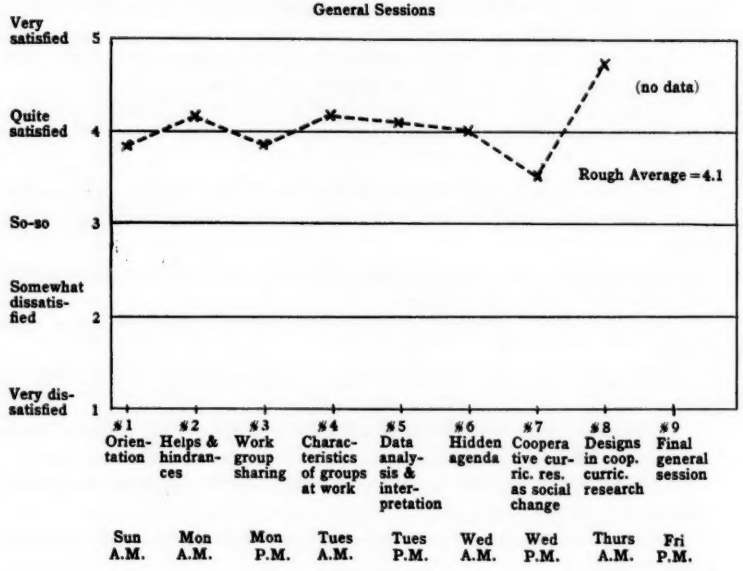
Post-meeting Reaction Sheets

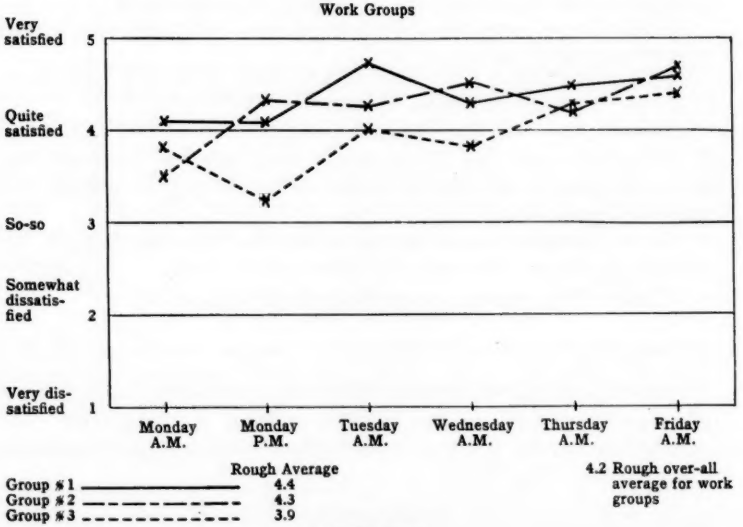
Following are shown average scores on satisfaction, as registered following the general sessions, work groups and special groups.[9] The average reaction was "quite satisfied" or better following all three kinds of experience. (Fig. 2).

[9] This section came largely from the work of Franklin W. Neff of the Horace Mann-Lincoln Institute staff, who with Miles has been responsible for data collection and analysis since the CCRI.

FIGURE 2

AVERAGE SATISFACTION OF PARTICIPANTS AND STAFF





Analysis of Role-playing Demonstration

Members listed "hindering" and "helping" features which they observed in a role-playing scene on Monday, then repeated this on Friday while listening to a tape recording of the Monday scene. A transcript of the role playing was made and an analysis of content was done in *units* of one thought, such as, "The big problem here is, of course, that we have youngsters of such widely varying ability."

1. *Increase in units reported from Monday to Friday.* The following table shows the increase in helping and hindering units.

Table I

Units Listed During Analysis of Demonstration

(34 Participants)

	Monday	Friday	Per cent of increase
Helping units	90	185	106
Hindering units	136	323	137
Total	226	508	120

This table shows that the number of both helping and hindering units reported by participants increased considerably from Monday to Friday, the total increase being 120 per cent. Hindering units predominated and showed the greater increase.

2. *Changes, by specificity of units.* Each unit reported by participants was classified according to whether the participant reported a *single act,* such as, "Julie—use observation of students"; noted *repeated acts,* such as, "Julie's suggestions relative to research"; or made a *generalization,* such as, "Principal's cautious attitude."

Table II shows the helping and hindering units listed on Monday and Friday and the increase according to unit classification.

Table II

Helping and Hindering Units Listed According to Unit Classification

(34 Participants)

	Helping items			Hindering items		
	Monday	Friday	Per cent of increase	Monday	Friday	Per cent of increase
Specific Act	48	116	142	48	164	242
Repeated Acts	17	44	159	34	84	147
Generalizations	25	25	0	54	75	39
Total	90	185	106	136	323	137

An additional tabulation, not shown on the table, indicates that specific acts reported increased 192 per cent from Monday to Friday; repeated acts increased 151 per cent; and generalizations increased 27 per cent. Thus it appears that people changed most in their sensitivity to, and recognition of the importance of, the influence of specific acts on the activities of the role-playing group. Participants seem to have changed least in making generalizations.

3. *Changes, by content of units.* Units were then classified according to the manifest *content* and the *process* of the unit. For example: "Principal says that all teachers should be doing the same type of studies if research is undertaken." The *content* of this, that is, the portion of verbal behavior referred to, deals with research design. The effect of this behavior on group problem solving and climate *(process)* is to raise resistance and perhaps hostility among the role players. Each unit was given both content classification and a process classification.

The *content* was classified "R" if the unit referred to problem solving in general, data, design of research, problem identification—in other words, research-oriented content. It was classified "H" if the unit referred to threat, permissiveness, defensiveness, satisfaction, interpersonal relations—that is, human relations-oriented content; and if the content was both H and R, or could not be given either of the preceding classifications, it was coded "O" (other).

Table III shows the helping and hindering units listed on Monday and Friday, according to content classification.

Table III

Helping and Hindering Units Listed According to Content Classification (34 Participants)

	Helping items			Hindering items		
Content	Monday	Friday	Per cent of increase	Monday	Friday	Per cent of increase
R.....	53	117	121	52	131	152
H.....	9	20	122	24	55	129
O.....	3	23	667	6	63	950
Total.....	65	160	146	82	249	204

While all the changes were greater than 100 per cent, the outstanding changes are in the research-oriented hindering items and in the "other" category of both helping and hindering units. The increase in research-oriented hindering items suggests that participants felt on

Friday that many more research-related activities in the role-playing scene hindered the action of the group than they had felt on Monday.

Most of the increase in units of the "other" category were repeated acts or a series of acts. This suggests that participants were increasing their skill in organizing their observations so as to draw meaning from a series of acts as well as from isolated acts.

4. *Changes, by process aspect of units.* The *process* was classified "R" if the unit promoted or hindered data-collection, problem definition, design of research—in other words, research-oriented processes; it was classified "H" if the unit promoted or hindered threat, permissiveness, interpersonal relations, defensiveness—that is, human relations-oriented processes; and if the process was both or could not be given either of the preceding classifications, it was coded "O."

Table IV

Helping and Hindering Units Listed According to Process Classification
(34 Participants)

	Helping items			Hindering items		
Process	Monday	Friday	Per cent of increase	Monday	Friday	Per cent of increase
R.....	42	95	126	5	31	525
H.....	17	53	212	70	179	156
O.....	6	11	83	6	38	533
Total.....	65	159	145	81	248	206

Table IV suggests that among the helping units, the greatest relative increase occurred in the human relations process area; among the hindering items, the research and other process areas increased relatively more.

5. *Increase in "generalization" units classified according to orientation.* Items reported which were coded as "generalizations" were general comments regarding some condition such as the climate of the group, the action of the group over a period of time, a general feeling or attitude of the group or of an individual over a period of time and not stated by the role players. Such comments tended to be summations or syntheses made by the participant and often were not clearly related to an act or series of similar acts by the role players.

Table V shows the generalizations listed on Monday and Friday, according to whether the content of generalization was research-oriented ("R"), human relations-oriented ("H"), or not clearly either ("O").

Table V

Helping and Hindering Generalizations Listed According to Content
(34 Participants)

Content	Helping items			Hindering items		
	Monday	Friday	Per cent of increase	Monday	Friday	Per cent of increase
R.....	5	1	−80	12	13	8
H.....	15	20	33	29	53	83
O.....	5	4	−20	13	9	−38
Total.....	25	25	0	54	75	39

Table V shows that the greatest relative increase in both helping and hindering items occurred in the human relations area. These results suggest that participants increased their capacity to make generalizations about, and became more sensitive to, human relations during the institute.

6. *Summary on role-playing analysis.* The following changes from the role-playing analysis on Monday to that on Friday seem to be quite clear.

a. The number of items reported by participants on Friday was about 2¼ times as great as the number reported on Monday.

b. The increase in the number of specific items was greater than the increase of repeated acts or generalizations.

c. Hindering items reported increased more than helping items.

d. According to the *content* classification, "other" items increased most by percentage; but "research" items increased most numerically.

e. According to the *process* classification, "research" items increased most by percentage; but "human relations" items increased most numerically.

f. The greatest increase in generalizations was in "human relations" units.

Staff Anecdotal Records

On Monday, after four hours of work groups, and again on Friday, after the end of work groups, staff members made brief anecdotal comments on the behavior of work group members as they had seen it in the work group setting. These comments were categorized with the following results:

Types of Change in Members Mentioned by Staff*

No change or little change	17
Sensitivity, increased understanding of groups	11

Types of Change in Members Mentioned by Staff*—Continued

Insight into own role	9
Insight and new ideas about back-home problems	7
Skill in group situations	4
New attitudes	3
Change, undifferentiated	3
Total mentions of change	37

* The unit here is *mention* of a change; some persons had more than one type of change mentioned for them.

Estimates by Staff of Over-all Change in Members

	Group I	Group II	Group III	Total
Data permit no estimate	0	4	0	4
Little or no change	5	6	3	14
Some change	5	3	7	15
Much or most change	4	1	5	10

These data indicate that the staff felt that about one-third of the members changed little, about one-fourth changed a great deal and the remainder experienced change falling between these extremes.

Final Oral Evaluation by Members

At the end of the final general session on Friday evening, staff members reported informally to the participants some of their feelings about the week. This was followed by small discussion groups and the reporting of critical and evaluative comments that the participants and staff wished to express. The comments below are reported as they were made. No attempt has been made to organize them. They show the wide variety of participants' opinions about the week.

The orientation evening should be modified . . . don't plunge into the institute so fast . . . follow with orientation on "experimental attitude" . . . original communications were of wrong nature . . . lighten the program to allow more social time . . . have "action research" lecture presentation come earlier in the week.

Special interest groups should have been identified with staff leaders so participants could select to get acquainted with more staff members.

Came expecting preplanning and were not certain how much sharing in planning would be acceptable to staff.

Repeat this institute for another group of people . . . set up "graduate" institute for this same group . . . have more special interest groups in advanced institute . . . have plan that wouldn't push staff so hard.

The staff had a good time!

Don't see any alternative to staff meetings and they took a lot of time —if participants feel that the staff didn't get well acquainted with *them*, that's bad. (staff comment)

Sunday night was a demonstration of making mistakes . . . and that you can move on from mistakes. (staff comment)

Should have had more opportunity for recreation . . . we had some time, but nothing to do . . . have a place for physical activities and for singing.

Happy we weren't pushed into recreation . . . opportunity to practice our own minor vices, not those of others.

We got to know well only about half the people here.

Can't expect to get to know everyone . . . you get to know people when you're working together on something important.

This institute was good—don't change it too much.

Should use our own cooperative research methods in considering change.

There was a drive to make everything count . . . participants were unusual. (staff comment)

This was a work-oriented culture. (staff comment)

Should have started with small groups, discussing participants' point of view . . . not so much staff and status.

Person's expectations are private . . . buzz groups might distort or change them.

How many clear expectations do we really have? . . . just sort of a concern or feeling . . . hesitate to verbalize it so early. (staff comment)

Would help to have rationale of conference and procedures more visible and more strongly flavored with curriculum research . . . we got so deep into group procedures.

People with no previous group development instruction should have a dictionary provided for vocabulary.

Final Oral Evaluation by Staff

Members of the institute staff met for about two and a half hours on Saturday morning to make an immediate evaluation of the institute experience prior to leaving. The following themes are summarized from a tape recording of the meeting.

Suggestions regarding another CCRI. Participants apparently favor another institute.

Analogous institutes benefiting from this one should be held, initiative taken by ASCD Research Commission.

If another institute is cooperatively sponsored, perhaps best to make it self-supporting.

Suggest next institute run from middle of week to middle of week. This

promotes unpacking of psychological suitcases. Leave Sunday free; gives break from "cultural island" but keeps people in it.

Probably better to have fewer interest groups, put more into them. Maybe not. Some belief that people got both sensitivity and sense of progress in one 2-hour shot.

Should have spent much more time in back-home diagnosis. If done earlier, might have made special group selections more useful.

Discussion about best length: 10 days, summer session, etc. Need to think in terms of two-day meeting in various times of year also.

Let the opening session be a stimulating experience. Long explanations do not explain anyhow. Explain work groups in work groups. Confusion at first session resulted through desire to have people get acquainted with staff by having many talk and to explain rationale at same time. Need to meet some expectations at first meeting but also to violate some others—to build the perception that this will be a different experience.

Should have built into schedule more time for people to reflect on the things that were happening so fast. Tried to cover too much.

Would have been valuable for staff to talk about hostility and aggression and its meaning in training experiences.

Experiences in some work groups suggest to some of staff that cooperative curriculum research training sessions should build in conditions that may cause people to have a new concept of leadership and interpersonal relations and group operation as well as greater self-understanding.

Such a concept of cooperative curriculum research does not appear possible to some of the staff members on a widespread basis unless substantial changes occur.

Publications. Summary report of this experience should go to members soon; should also be in educational magazines: *Educational Leadership, NEA Journal,* etc. It ought also to go into ASCD Yearbook about two years hence. Should be slanted on "how" side, what transfers, ways of developing leadership, and the like. Might discuss the kind of steering research we are doing, as an illustration of what is being talked about in this yearbook.

Staff considerations. Staff should have some repeat members, but also some new for purposes of training them. This is affected by problem of staff load. Perhaps regional institutes would solve this problem as various staff members could attend various regions.

Need to have more total staff preplanning on actual workshop. Should have left details we worked on in February to a couple of people, come here earlier and taken time to build a good staff team. (Two days ahead were not enough time.)

If this much staff time is to be standard, people will have a tough time putting these on all over the country where degree of staff acquaintance may be less, and where there is little preplanning. Need conference design suffer-

ing less from this problem. More staff may be an answer. Good to have school people in contact with social scientists.

Crowded schedule was a partial cause of Sunday night's difficulty. Need time to practice general sessions.

Some staff members felt apart from the rest. Difference seemed based in group dynamics background and attitude. Perhaps a solution is to have a staff each member of which is experienced in both curriculum and group dynamics. Differences caused confusion of communication and feelings of insecurity. More time for staff discussion might have helped.

Need to define staff roles clearly, especially role of administrator. He needs to be more intimately a part of the program.

It was a genuine learning experience with real involvement for us. We learned from each other as well as from institute members.

Follow-up Evaluation Data

Findings

Analysis of data gathered following the institute is not complete at this writing. However, some preliminary findings are discussed below.

Inventory

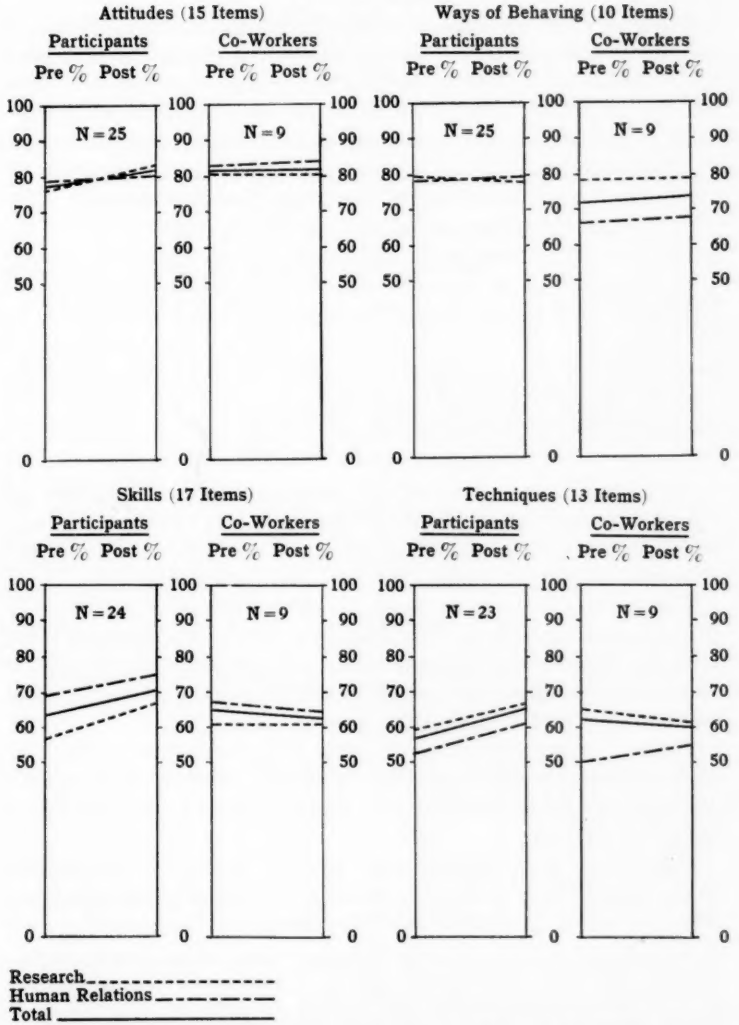
The inventory was completed prior to the institute by 36 of 43 participants, 18 of whom persuaded co-workers to respond to the same instruments (to act as a kind of control group). In November, the same inventory was completed by 29 participants and 15 co-workers. The following results are based on the 25 participants and nine co-workers who returned both the pre- and post-inventories. (In some cases the N was reduced through nonresponse to certain subscales.) Respondents rated themselves on attitudes, behavior, skills and techniques as well as separately rating their influence on others in these areas.

In order to obtain some measure of change, participants' raw scores were compared with the top possible raw score for each subscale and reported as a per cent. Thus, a pre-institute per cent of 77.7 on the attitudes subscale can be compared with a post-institute per cent of 81.8.

1. *Self-ratings.* The charts in Figure 3 show the changes which occurred in self-ratings by participants and co-workers. Each pair of charts indicates the total raw score as a per cent of the possible score. Each pair, as labelled, shows the average pre-test per cent and post-test per cent by participants and co-workers for one subscale of the inventory.

FIGURE 3

PARTICIPANTS' AND CO-WORKERS'
SELF-RATINGS ON PRE- AND POST-TESTS
(As a Per Cent of Possible Score)*



*Significance of differences between pre- and post-tests is shown in Table VI.

As these charts indicate, participants' self-ratings generally changed more than did those of the co-workers who responded. To determine whether such changes are statistically significant, raw scores on pre-institute inventories were compared with raw scores on post-institute inventories by use of the median test.

Table VI shows the change of participants and co-workers from the pre-test to the post-test. Figures indicate the change in percentage points from the pre-test per cent to the post-test per cent.[10]

Table VI

Change in Inventory Scores of Participants and Co-workers from Pre-test to Post-test as Indicated by Percentage Points of Difference

(Changes are positive except as indicated.)

	Attitudes	Ways of Behaving	Skills	Techniques
Participants	4.1	.3	7.6***	8.0*
Co-workers	.9	.7	−1.7	−1.8
Net difference	3.2	−0.4	9.3*	9.8**

* Indicates difference significant at the 5 per cent level
** Indicates difference significant at the 2 per cent level
*** Indicates difference significant at the 1 per cent level

As Table VI shows, the ratings participants gave themselves did not change significantly on the attitudes or ways of behaving subscales; but there were significant changes on the skills and techniques subscales. Co-worker changes were not statistically significant.

The last line of the table points up the net difference between participants and co-workers. This difference favors the participants, i.e., indicates their ratings changed more in all subscales except ways of behaving. The difference is significant at the 5 per cent level in skills and the 2 per cent level on techniques.

Figure 3 above also shows the pre- and post-institute ratings for each subscale by the dimensions of human relations and research. These are shown on the charts by means of dotted lines (see key at bottom of charts).

Significance tests indicate that research ratings of participants change significantly at the five per cent level on all subscales except ways of behaving. Human relations ratings of participants do not

[10] Percentages were computed by comparing actual scores with total scores possible. The figures quoted are the differences between pre- and post-test percentages and do not represent per cent of increase or decrease. For example: the 8.0 percentage point change on participants' ratings on techniques is actually a 14 per cent increase.

change significantly at the five per cent level on any subscale and reach the 10 per cent level only on the skills subscale. These differences suggest that participants felt that they changed more in the research dimension than they did in the human relations dimension.

The human relations and research ratings of co-workers do not seem to make any pattern which would indicate a trend. None of the changes from the pre- to the post-tests in either dimension are significant at even the 10 per cent level on any of the subscales.

Thus, the preceding charts and table suggest that attendance at the institute may have increased the participants' skills and techniques (as they saw these) in cooperative curriculum research activities.

2. *Influence rating.* As pointed out earlier, in addition to rating himself in the four areas, each respondent was asked to rate his own influence on others, on the same items. The charts in Figure 4 show the changes which occurred in the influence ratings of participants and co-workers. The charts were constructed in the same fashion as the preceding ones.

These charts indicate an increase in self-rated influence by both participants and co-workers in all areas except techniques. Participants' ratings on the techniques subscale decreased slightly. Co-workers' influence ratings increased more than did participants' on all subscales except skills.

Table VII shows the change of influence ratings reported by participants and co-workers from the pre-test to the post-test. Figures indicate the change in percentage points from the pre-test per cent to the post-test per cent.

Table VII

Change in Inventory Influence Scores of Participants and Co-workers from Pre-test to Post-test as Indicated by Percentage Points of Difference

(Changes are positive except as indicated.)

	Attitudes	Ways of Behaving	Skills	Techniques
Participants	6.4	4.8	3.7	−.8
Co-workers	11.6	20.0	2.9	17.4
Net difference	−5.2	−15.2*	.8	−18.2

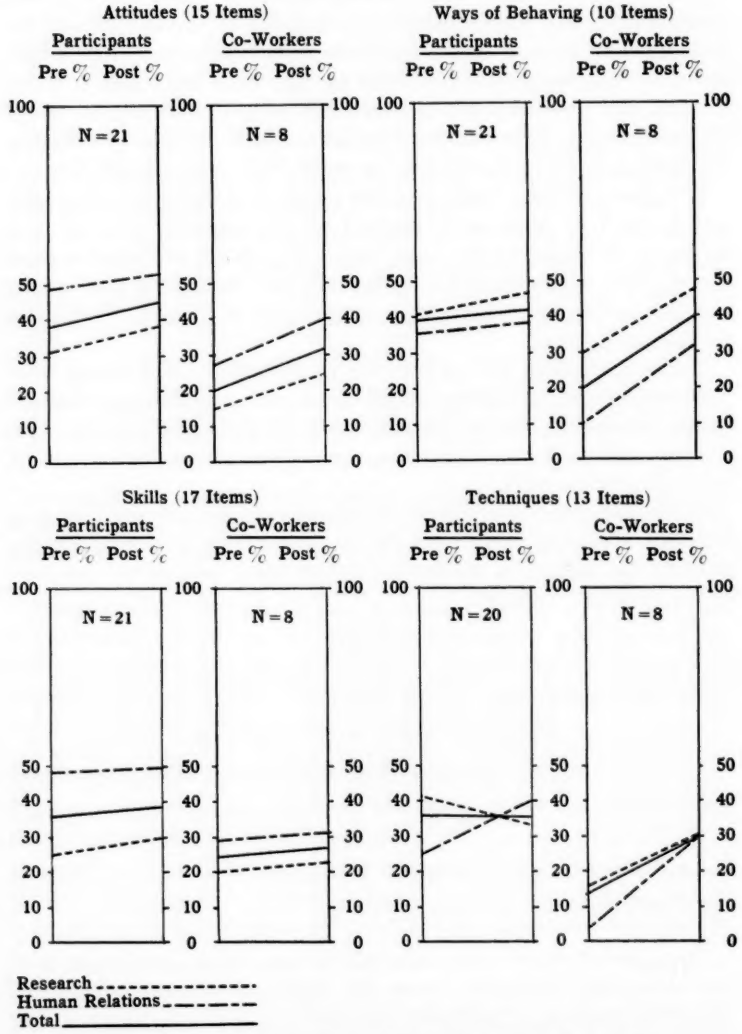
* Indicates significant change at the 5 per cent level

Thus, the changes in the influence ratings which participants and co-workers gave themselves were not significant in any of the areas. However, there is a significant difference between participants and co-workers on the ways of behaving subscale. There the self-reported

FIGURE 4

PARTICIPANTS' AND CO-WORKERS' SELF-RATINGS OF INFLUENCE ON OTHERS, IN PRE- AND POST-TESTS

(As a Per Cent of Possible Score)*



*Significance of differences between pre- and post-tests is shown in Table VII.

influence change of co-workers is significantly greater than that of the participants.

3. *Comparison of self-ratings with influence ratings.* When one compares the first set of charts with the second, or the first table with the second, there seems to be an incongruity in that changes on the first (ratings of self), while smaller than changes on the second self-ratings (influence on others), are more often statistically significant. This is primarily a result of a difference in self-rating methods. Respondents were given a five-point scale in rating themselves on each item of the inventory. In reporting their influence, they reported only having it or not having it on each item. Thus, a relatively large change in per cent on the influence charts may represent a relatively small change in raw score.

4. *Comparison of eight participants with their own co-workers.* Eight of the participants who responded both before and after the institute were compared with their own co-workers who also responded both before and after. There were no significant differences between paired participant and co-worker in influence. On self-ratings, the only significant difference occurred on the techniques subscale, participants' self-ratings changing more than did those of co-workers at the 2 per cent level.

5. *Comparison of pre- and post-institute inventories.* In comparing the pre- and post-institute responses of participants and co-workers on the inventory, one can raise a number of interesting questions. Why was the change in participant self-ratings least on the ways of behaving subscale? Why was change in participant self-rating greatest on the skills and techniques subscales? Why did participant influence ratings show least change in the techniques area? Why did co-workers' influence ratings start lower, and generally increase so much more than those of participants?

a. *Lack of change on the ways of behaving subscale.* Hopefully, the major outcome of a learning experience is the changed behavior of the learners. While there is some data in informal letters to the staff and in the post-institute reaction data to support the belief that participants are behaving differently, the ways of behaving subscale of the inventory does not suggest this. The low amount of change here may be related to the phrasing of items on this subscale. Each item is phrased in terms of "I do . . . ," and the respondent is in a sense more clearly required to affirm that he *does* behave in such and such way. Other subscales did not so clearly examine overt behavior in each item.

The ways of behaving subscale has fewer items than any of the other subscales. This would mean that respondents would have to change their ratings markedly to bring about a significant change.

Participants may know or feel a difference in their attitudes, skills and techniques but may not have had opportunity at the time of the post-test to test their behavior adequately so as to feel confident in rating their behavior very differently than they did on the pre-test. Too, it is difficult to translate changes at the cognitive level to changes at the behavioral level. And it may well be that the respondent feels that he can practice some of the specific skills and techniques rather unobtrusively while recognizable general changes in his behavior may be slowed by the demands of the situation in which he finds himself.

b. *Results on the techniques subscale.* Why did participants' *influence* ratings on the techniques subscale change so little? Since this was an area of significant change in *self*-rating, one wonders why the influence shift does not parallel it. It is possible that participants, while using the techniques with greater frequency and adequacy themselves, have not felt success in getting others to use them. It may also be that efforts to increase their use by others had not, at the time of the post-test, been made.

It may be that the relative concreteness of the items in the techniques subscale makes a difference. Thus a participant might influence others to ". . . feel adequate in reading and interpreting published research . . ." (attitudes subscale), or to ". . . place a lot of responsibility on the group . . ." (ways of behaving subscale), or to "Involve others in the research approach to curriculum change . . ." (skills subscale), without having the same kind of tangible evidence which is demanded to show that he influenced others to use, say, "sociometric devices."

c. *Differences in changes of influence ratings.* On pre-institute influence ratings, co-workers show up much lower on influence. To see if this was a result of the participants' choosing as co-workers persons of lower status, the job titles of eight participants who responded pre- and post-institute were compared with those of their co-workers. No appreciable status difference was found.

Seven of these eight participants were compared with all participants on attitudes influence ratings, and their co-workers were compared with all co-workers. Although the seven participants' influence scores began slightly lower and ended slightly higher than those of other participants, the basic differential between these participants and their co-workers remained. Although we are certain that the co-

worker sample was not biased by status problems, or by some kind of selection process such as that the participants who recruited co-workers were different from other participants, we still are at a loss to explain the difference in influence scores. It may be that people who are aggressive enough to attend a training institute on "company time" (as 75 per cent did) see themselves as more influential. The greater co-worker rise from an initially low score may simply mean that it is easier to move from 5 per cent to 25 per cent than it is from 30 per cent to 50 per cent on the influence ladder.

6. *Summary of the results of the inventory.* In summing up the results of the inventory, it appears that participants' self-ratings changed significantly on the post-test on the skills and techniques subscales. Not only are these changes significant statistically, but they are significantly greater changes than those shown by the "control" group, the co-workers. Changes of influence, on the other hand, do not appear significant, although the change of co-worker ratings on one subscale, ways of behaving, are significantly greater than that of participants. Apparently participants do not think their own changes have diffused to the people they work with.

7. A *note on sample adequacy.* The reader has probably become aware of some of the difficulties which have appeared as a result of the small number of respondents, particularly co-workers.

The post-institute data were collected about six months after the institute, so that participants would have had time to apply the activities of the institute to the back-home situation. A penalty was paid in the reduced number of respondents. Eighty-four per cent of the participants returned the inventory before the institute, 67 per cent returned the post-institute check, and 58 per cent returned both. Of the co-workers, 42 per cent completed the pre-institute inventory; 35 per cent, the post-institute form; and 21 per cent completed both.

In checking for bias, there seems to be no relation between pre-institute scores and whether the participant returned the post-institute inventory. There also is no apparent relation between work group satisfaction scores and returns. This suggests that there is no serious bias of a sort which would affect inventory, case study, and post-institute reaction sheet data, (all of which were mailed and returned together).

The Case Study

In completing the case study, respondents read a brief account of a problem which arose between primary teachers and the school administration and which involved, more or less directly, attitudes of lay

and professional people, pupil health and welfare, professional ethics, line and staff relations, and the like. Respondents were to list the steps they would take in dealing with the problem (diagnosis) and the reasons (underlying principles) for taking those steps.

Twenty-three participants, eight co-workers, and three staff members completed the case study before the institute and again in November 1955. Three judges who had not attended the institute were given copies of paired responses, from which date, name and status (participant, co-worker, etc.) had been removed, and were asked to indicate which was "pre" and which "post." The following table indicates the accuracy of their judgments.

Accuracy of Judge Identifications of Pre- and Post-case Analyses

	Participants	Co-workers	Staff	Totals
3 Judges agreed, judgment correct	9	2	1	12
2 of 3 Judges agreed, judgment correct	6	1	1	8
2 of 3 Judges agreed, judgment incorrect	4	2	1	7
3 Judges agreed, judgment incorrect	4	3	0	7
Totals	23	8	3	34

In general, a majority of the judges could distinguish correctly between pre- and post-analyses by participants in 65 per cent of the cases, while with co-workers they were accurate only 38 per cent of the time. This distribution of judgments is not statistically significant.

When asked to specify criteria they had used, judges listed a wide variety of items but emphasized items such as naïveté, overconcern with authority and lack of evidence in "pre" analyses, and items such as use of evidence, concern for human relations, use of scientific method, and more sensitiveness and thoroughness in diagnosis in "post" analyses.

Further refinement of this instrument is being considered.

Post-institute Reaction Sheet

One question on this sheet asked members to list *new* cooperative curriculum research activities which the institute experiences had proved helpful in initiating. A second question asked the same in regard to the improvement of already-existing projects. Following are categorized replies from 28 respondents (a 67 per cent return).

Activities Mentioned by Members

	New	Ongoing	Examples
1. Item left blank	4	5	
2. No changes, no new activity	3	3	
3. No cooperative curriculum research, but improved human relations	7	3	Evaluated group process in meetings; used post-meeting reaction sheets.
4. Activity not discriminable as either curriculum research or improved human relations	12	14	Helped teachers work on their own problems; discussion of school policies.
5. Activity apparently cooperative curriculum research	4	7	Studying reading; state ASCD project.
6. Activity clearly cooperative curriculum research, specifically described, etc.	8	4	Study of achievement of core pupils; children's interests; analysis of library materials.

Another question asked members to indicate features of the week which should be retained in a second institute, and what improvements should be made. About one-third to one-half of the members who responded appear to feel that work groups, special groups, general sessions and the same general structure should be retained, and stress on evaluation of the week should be continued. Many other specific suggestions were made.

When asked to specify improvements, members' responses were more scattered. Recurrent themes (by four or more people) were: clarify or extend members' role in planning the institute; lighter schedule; more emphasis on curriculum research. Seven people indicated that they would like to attend an advanced institute.

Data Analysis Plans

At this writing, work on the data is going forward on two fronts. We are attempting to develop stable, valid means of scoring our instruments (such as the case study and inventory) which will provide dependable measures of member change, and resultant changes in the member's co-workers as he sees these. Scores from different instruments will be correlated to discover whether general change is evident, or a profile approach must be taken.

Secondly, with basic measures of change established, we are planning to locate and test a series of *predictors* of such change—factors associated with high or low amounts of change. One family of predictors is individually oriented: the member's needs and interests before training, his expectancies before training, his "trainability" or personal potential for change.

A second family of predictors is oriented toward the impact of the training experiences themselves—the member's emotional reactions during training and his participation during training. We hypothesize that these may be associated with effective change and/or influence on others.

A third family of predictors is situationally oriented: the need for situational change in the member's back-home situation, the flexibility or change potential of his organization, perceptions of the training institute as a source of help, the existence of a cohesive "team" of coworkers, the member's power or influence potential on the job, and his own emotional relationship to his back-home organization. These "back-home" factors, too, may be related to change.

We believe that this approach, moving beyond the merely descriptive level, can be of considerable help to planners of similar institutes and other training experiences in accounting for observed or measured change. Positive findings would be useful during recruiting as well as during the design stage of planning.

Subsequent Institutes

A Second Cooperative Curriculum Research Institute has now been held at Pere Marquette State Park near Grafton, Illinois. This institute was broadly similar to the first in rationale and design and had 59 participants and 12 staff members. The planning drew extensively on the East Lansing data. Research process and human relations skills in the solution of curriculum problems seemed to be somewhat more effectively integrated at this institute than they were at East Lansing. The "laboratory" aspect, and the training-centered aspect seemed to have less emphasis, although the staff preplanning and the intensiveness remained.

A number of regional institutes, staffed in part by members of these two national meetings, are being planned. Continued careful evaluation will help indicate how effectively the school people who need skills to conduct cooperative research are getting them. The hypothesis that lack of skill is the major stumbling block to the extension of cooperative research inquiry may not be sustained, but we are on our way to finding out.

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(As of November 1956)

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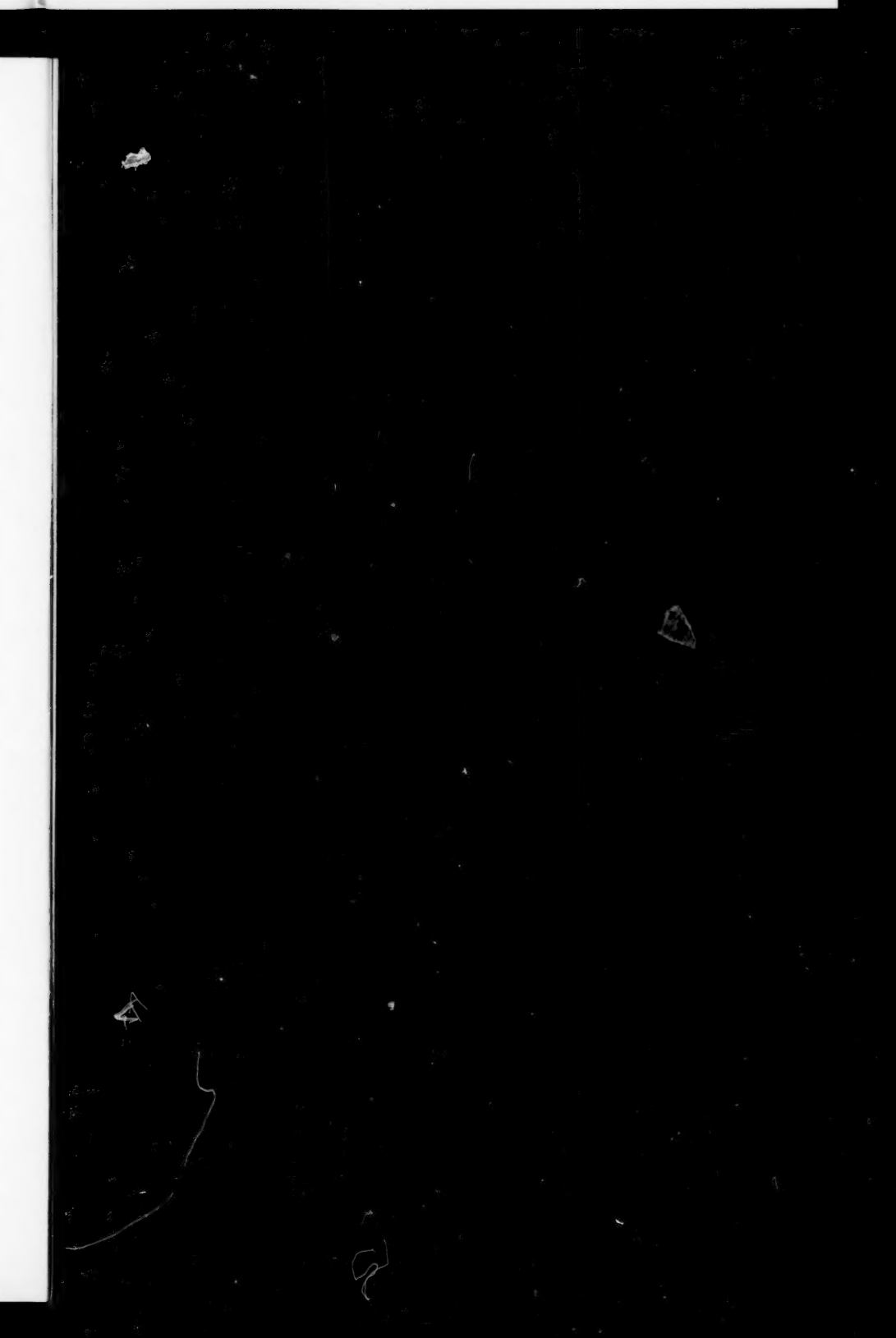
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